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LUCERNE.

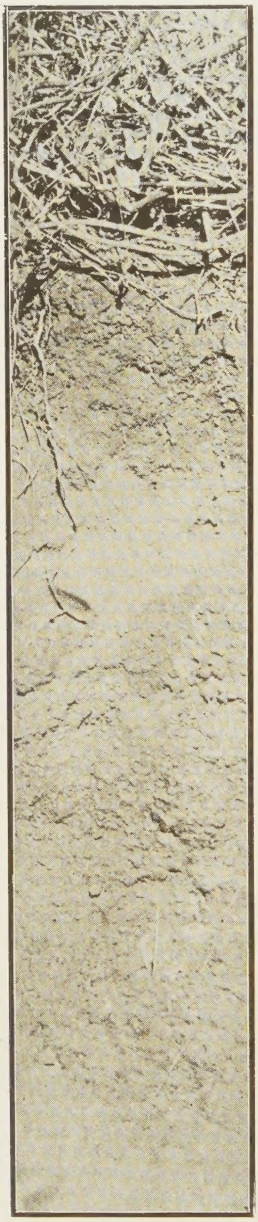
MOUMAHAKI EXPERIENCE.

T. W. LONSDALE.

IT was in the year 1910 that lucerne investigation was initiated at the Moumahaki Experimental Farm. The land then devoted to the purpose was the highest, the driest, and the most exposed portion of the property—a field situated on the edge of a deep valley. In the light of prevailing opinion that lucerne would thrive only in an exceptional environment, such as that provided by a rich river-bed, the test was a most severe one. That it amply demonstrated that lucerne would grow remarkably well in such a situation was quite sufficient to upset the preconceived ideas as to the exceptional conditions demanded. Since that time much local evidence has been forthcoming to supplement the Moumahaki experience; indeed, it has now been well demonstrated in many

parts of the Dominion that, given fair treatment, there are few situations where lucerne will fail.

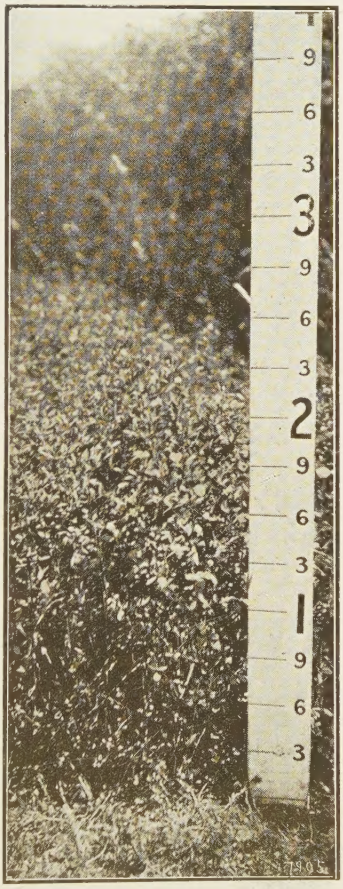
The success of the first experience at Moumahaki with lucerne led to the work of demonstration and further experimentation being largely extended, until to-day variety, cultivation, management, and grazing tests are being carried out on an extensive scale. In addition to this work, the making of lucerne silage and lucerne hay now come within the ordinary season's work of the farm.



Until quite recently lucerne has been regarded merely as a supplementary crop to be made use of during those portions of the year when the regular farm crops are not available and the pastures are either fed down or dried up. Even viewed from this standpoint, lucerne is a most important crop; but its value in this connection sinks into insignificance when it is regarded as a permanent crop, giving an abundant supply of succulent fodder during the greater part of the year. The whole trend of New Zealand agriculture is towards the production of green pasture from the soil, or the direct feeding-off by animals of everything produced on the agricultural farm. Every ton of additional green pasture produced on a farm means increased carrying-capacity, whereas every ton of supplementary crop to grass that requires to be hand-fed adds enormously to the cost of producing the marketable commodity. Here lucerne stands out from all other fodder crops, for it alone can be used as a pasture, and a pasture whose yield is enormously in excess of even the most productive of temporary grass pastures. It is the highest

character of pasture known to the agricultural world. From an economic viewpoint its value cannot be overestimated. It lasts for many years, and therefore the first cost of production does not require to be fully recovered until the end of its duration; whereas with the temporary pasture the cost of establishment must be recovered as the first charge within the three or four years of its existence. A temporary pasture to last four years, and costing £2 16s. to establish, requires to have 14s. per annum debited against its initial cost; whereas the lucerne-field with a duration of ten years, and established under expensive conditions —at a cost of, say, £4—requires only 8s. per annum to be debited against the initial expenditure of its establishment. If the rotation is a longer one the comparative cost is, of course, very much less. Then, of course, there is to be considered the added fertility to the soil by the growth of lucerne, which is very much higher than in the case of ploughed-in pasture. There is a great field of experimentation before us in the determination of the various classes of soils in which lucerne can be grown and grazed with advantage. Its success as a permanent pasture crop has been amply demonstrated under ordinary farming conditions in the Marlborough District by the sheep as well as the cattle feeder, and this experience is being repeated in the Moumahaki experiments.

With continued experience of the great fodder plant two factors to success have been emphasized again and again — especially when considered in the light of the unsatisfactory experience of some others. These are the thoroughly clean bed and the sowing with clean seed. Any carelessness in regard to the former is fatal, and in equal degree the use of cheap and inferior seed is a grave error. Against the extra cost of ensuring a perfectly clean seed-bed should be set the fact that the crop does not require renewing for some years, and then is



LUCERNE AT MOUMAHAKI, SIX WEEKS AFTER CUTTING.

providing a supply of the best green fodder at practically all seasons of the year. It is not too much to say that the expenditure in properly preparing the land for lucerne ensures a higher return than can be credited to the cost of preparation for any other crop.

While experience in all parts of the world goes to prove that lucerne will thrive under a great variety of soil and climatic conditions, there is one condition it resents—waterlogging in either the soil or the subsoil. It must not have wet feet. Hence where natural drainage is not possible artificial drainage is imperative.

Sheep on Lucerne at Moumahaki.

The experience now being gained in this country upsetting the obsolete contention which confined lucerne to only special localities is being repeated in America. "It has been declared," writes Coburn, the noted American authority on the subject, "that it must have a rich sandy loam, and forthwith from the deserts of Nevada, the sandhills of Nebraska, and the thin, worn, clay soils of the South come reports of satisfactory yields. Such results," he continues, "are significant, indicating better returns than any other crop brings from these varied soils, and that few farmers are justified in postponing the addition of lucerne to their agriculture because of supposed hindrance of soil and climate." Another

Mares and Foals grazing on a Moumahaki Lucerne-field.

statement made by Coburn is worth recording as showing the remarkably adverse conditions of soil and subsoil under which the plant will thrive. He writes, "It has been declared that it will not grow over a hard-pan subsoil, and at once a New York man reports a good field of alfalfa with roots 15 ft. long that pass through 6 in. of hard pan, which was so hard that it had to be broken with a pick-axe in following the root." Sufficient evidence has been accumulated at Moumahaki to prove the cosmopolitan nature of lucerne. Recently on a visit to Marlborough I had

Grazing Calves on Lucerne at Moumahaki.

opportunity of studying a demonstration which bore out to a striking degree the American statement above quoted. On a sheep-farm at Seddon lucerne was growing luxuriantly on a portion of an old river-bed, a shingle-flat which prior to the advent of lucerne was useless and unused. Pointing to the foothills the owner called my attention to teams preparing the land for lucerne on steep slopes, and he remarked that lucerne would yet enable him to carry four times the number of sheep he could under pasture. As to the lucerne-roots penetrating an hard iron-pan, the American experience is being repeated at Moumahaki. Over the greater area

Feeding Lucerne to Cows in the Field.

of the various lucerne testing-fields at this farm there is an iron-pan ranging from 12 in. to 16 in. in depth which the lucerne-roots penetrate, though in doing so they are compressed and twisted in shape in the struggle through the rocky mass. Where an endeavour has been made to follow a lucerne-root at Moumahaki this iron-pan has had to be broken with a pick.

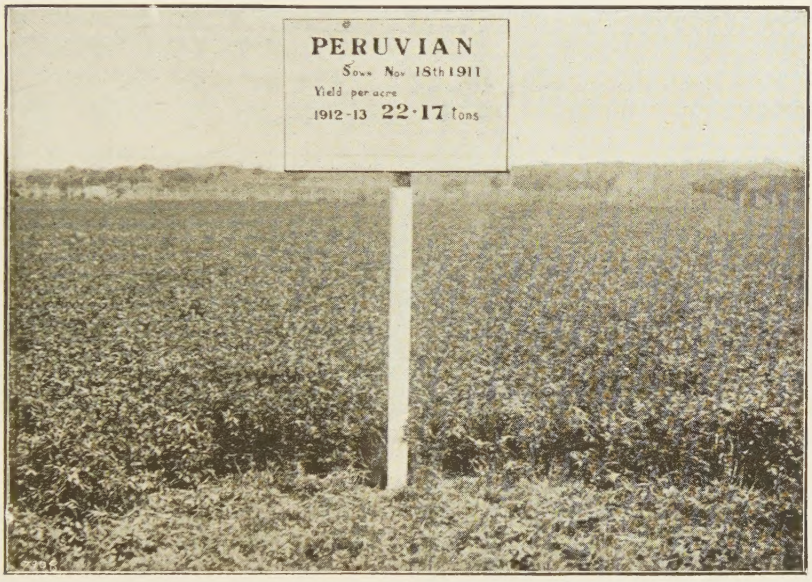
It has been alleged against lucerne that a good pasture is more profitable when the cost of establishing it is compared with the cost in connection with lucerne. My experience at Moumahaki points to the opposite being the case. The special requirements of lucerne—the freedom of the land from weeds, the use of high-grade seed, and the subsequent careful management—are exactly what a pasture demands if it is to be fully productive throughout its existence. The presence of weeds in a pasture is just as bad as the presence of weeds in lucerne; the use of inferior seed is equally unprofitable in either case, and I cannot see much difference between the loss resulting from a neglected pasture and a neglected field of lucerne. Certainly there is this difference: the neglected pasture will be tolerated, even if the plants of better feeding-value have disappeared; whereas the neglected lucerne crop will be replaced by something else, even though the feeding-value may be higher than that of the neglected but tolerated grass-field. Probably the most serious leak in farming operations in this country is the use of poor, weed-infested pastures, which do not even give sufficient return to cover the interest on the capital value of the land.

Take the cost per acre of establishing a pasture of decent feeding-value: Preparing the land (one ploughing, harrowing, and rolling), 10s.; cost of manure, 12s.; cost of seed, £1 10s.; applying manure and sowing seed, 2s.: total £2 16s. The cost of establishing lucerne under the system adopted at Moumahaki works out as follows: Production of crop of vetches and barley for ploughing in, owing to the natural deficiency of humus in Moumahaki soil, £1 16s. (one ploughing, harrowing, and rolling, 10s.; manure, 5s.; seed, 19s.; applying manure and seed, 2s.); ploughing-in green manure, harrowing, and rolling, 10s.; liming, cost and application, 10s.; 13 lb. seed per acre, at 1s. per pound, 13s.; manure, 12s.; applying seed and manure, 2s.: total, £4 3s. It is, of course, not necessary to grow and plough in a green crop in soils having a fair humus-content, so that the cost of preparing the land for lucerne at Moumahaki is much higher than need be the case under ordinary conditions.

The treatment above described supposes, of course, that the land has been previously well managed and is free from weeds. It may be mentioned to the advantage of lucerne that in the

first season it will give a much heavier return of feeding-material than grass.

In order that farmers may have some guide as to the comparative value of pasture grasses and lucerne for grazing purposes, experiments are being conducted at Moumahaki to test lucerne thoroughly under grazing conditions. This season one field of lucerne is being grazed with sheep. Although the results, to be based on the actual increase in weight made, will not be available till the end of the season, the test so far has given most encou-



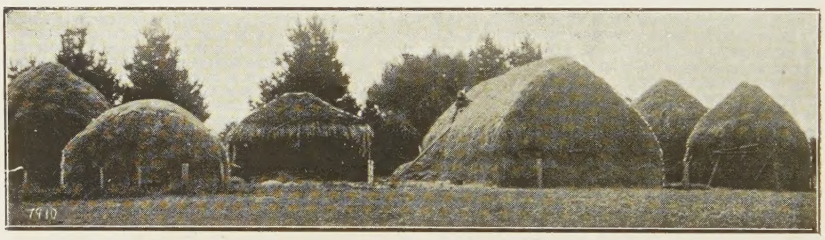
THE PERUVIAN VARIETY IN THE VARIETY-TESTING FIELD.

This was cut on 16th January, the growth in nineteen days being 22 in. Though making a rapid growth, this variety is a light yielder.

raging results. At the end of January lambs were being heavily stocked on the fourth feeding of the season, and were enjoying an abundance of the succulent forage at a time when pastures were dried up and the rape crops in general throughout the district were a failure, owing to the boisterous spring and the dry weather in the mid-season. The lambs have never been changed, grazing on the lucerne till it was well eaten down, the crop requiring a rest of only about a fortnight before restocking. The increase in weight from the lucerne feeding was most satisfactory, comparing more than favourably with any fattening-crop previously tried at Moumahaki.

Not only have sheep been successfully grazed on lucerne (without rest at any time), but cattle and brood mares with foals have also been grazed for long spells, and not a single instance of bloating has been recorded; and this in spite of the fact that the grazing of the different classes of stock took place in an exceptionally rainy season.

Lucerne in all forms is being extensively used for stock-feeding at Moumahaki. When the calves of the dairy herd are three months old they are fed on lucerne-hay chaff (in troughs) immediately after their fortified skim-milk ration. Lucerne hay is used largely for the cattle and horses in the winter months. In the spring lucerne silage was fed to bullocks after the mangels were finished, and the results were most satisfactory, the freezing-works management commenting on the excellence of the carcases when dressed.



The Lucerne Hay and Silage Stacks at Moumahaki.

Sixteen varieties of lucerne are being tested at Moumahaki. The varieties which have given the most satisfactory results so far are Marlborough and Hunter River.

The illustrations in this article are from photographs by the Editor.

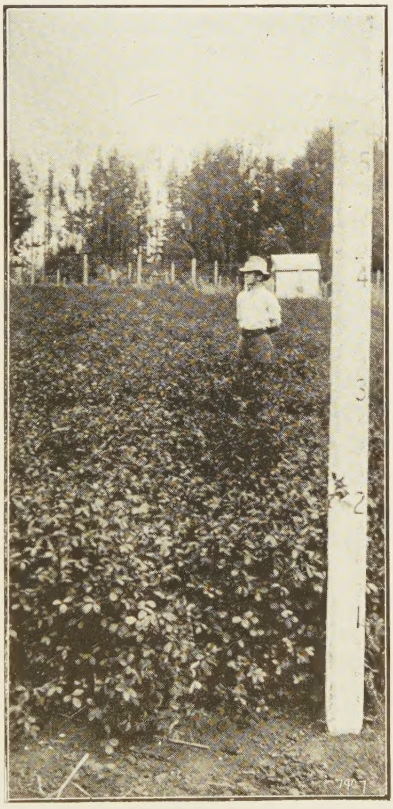
No other agricultural plant leaves the soil in such good physical condition as lucerne.

There are some silent subsoilers that do their work with ease and, in their way, more effectually than any team or plough ever hitched. The clover-plant is highly famed as one of these, but lucerne is its superior. Its roots work Sunday as well as Saturday, night and day; they strike five, ten, fifteen, or twenty feet deep, making innumerable perforations, while storing up nitrogen; and when these roots decay they leave not only a generous supply of fertility for any desired crop, but millions of openings into which the airs and rains of heaven find their way, and help to constitute an unfailing reservoir of wealth upon which the husbandman can draw with little fear of protest or overdrafts.—*F. D. Coburn, U.S.A.*

LUCERNE MANAGEMENT.

W. S. HILL, B.Agric.

ACTING on the experience quoted in the November issue of the *Journal*—that all eight varieties of lucerne suffer more or less from being cut back in the spring when the foliage is immature—these varieties for the season 1913–14 at the Moumahaki Experimental Farm were allowed to stand uncut until the 6th January, 1914. At this time an observer would certainly have considered the plot to be a wasted one, as there were numerous mature sow-thistles, while much of the early spring growth of lucerne had decayed, and each subsequent growth was easily discernible. Most of the plants showed foliage in all stages, from young shoots and flowering branches to decayed branches. It was at this stage that the first cut of the season was made. The cutting formed palatable fodder and was fed to the dairy herd. As was anticipated, the new growth came away at a wonderful rate. This experience confirms my previous opinion that if it is desired to obtain the bulk of the fodder during January and February the usual spring cuttings should be delayed as long as possible, even if it be to the New Year.



[*C. E. Cuming, photo.*

RATE OF LUCERNE-GROWTH AFTER LATE FIRST CUTTING.
Photograph taken 29th January.

The data in connection with this rapid summer growth are as follow: Rainfall, 1st to 31st December, 8·34 in.; 1st to 29th January, 0·88 in. Average temperature, 6th to 29th January, 62·3° F. Average

height of colonial lucerne on 29th January, 28 in. Maximum height of colonial on the same date, 32·5 in. The twenty-three days' growth of colonial averaged 1·22 in. per day, or a maximum rate of development of 1·41 in. per day.

NEW ZEALAND COCKSFOOT.

A. H. Cockayne.

During the past few seasons Danish cocksfoot-seed has secured a dominant position on British markets, previously divided between American and New Zealand seed. The relation of Danish seed to the New Zealand export cocksfoot trade is summed up as follows by one of the largest seed-importing firms in Great Britain :—

"Danish seed has taken the place of New Zealand on European markets. It is finer seed, contains no holcus (Yorkshire fog), and germinates from 10 to 15 per cent. higher than does New Zealand. We would give to-day 5s. a hundredweight more for 18 lb. Danish than for the best 18 lb. New Zealand, and Danish farmers say they can grow it profitably to sell machine-dressed seed at 40s. to 45s. (4½d. per pound) per hundredweight, c.i.f. British ports. So that, except in case of the failure of the Danish crop, New Zealand must come in at a low price in order to compete."

If New Zealand growers desire to regain the undisputed position they have occupied for many years past they will require to clean the seed in a much more effective manner, especially in regard to Yorkshire fog, which, even when present in only small amounts, seriously prejudices New Zealand seed. Again, the germination of local machined seed is by no means as high as it should be. This can only be remedied by a more complete removal of the "deaf" seeds.

Every organism is the product of two factors—environment and heredity. In the case of plants environment includes climate and the condition and the care of soil. Heredity means the transmission of characters from one generation to another. The soil must be well cultivated and contain the essential plant-food, and the plants must be given ample space and air and be not crowded out by weeds. To attain maximum development the crop needs a constant moisture-supply and adequate protection from abnormal and extreme climatic conditions. All these are necessary, but of equal if not of greater importance is the quality of the seed. This should be of known origin both as to variety and locality grown, and be tested for vitality and purity. Economical farming demands that all the above points must be studied and attended to in proportion to their importance to the particular crop and locality.

LUPIN:

ITS VALUE AS A GREEN MANURE.

A. Macpherson.

Ploughing-in a leguminous crop in the great work of soil-improvement has long since passed the experimental stage. The only question now to be solved is which is the best medium for creating the desired organic matter. Obviously the plant should be a member of the legume family, while it should not only be capable of making rapid growth, but the growth should be of a profuse and succulent nature. Such crops as red clover, vetches, &c., have been largely used for this purpose, and have answered very well. The lupin family is now claiming increased attention, and experiments conducted in the South Island have demonstrated that this plant is of very special value in this connection. In the year 1911 the blue variety was grown on the depleted lands in the Mackenzie country and at Earnscleugh in Central Otago, but merely in order to ascertain whether it would succeed in the environment; and it succeeded very well, growing to a height of 16 in. Last year seed was secured from Europe of the three varieties—white, blue, and yellow—and these were planted on the pure sand near Christchurch for the purpose of ploughing in. The first-named variety gave much the best result, attaining a height of 2 ft. 3 in. in three months, and giving at the same time a very much greater wealth of leafage and stem than the others. The three varieties were also sown on the scrub land between the Rivers Eyre and Waimakariri to create humus, and here again the white lupin proved to be much the best. In the demonstration in the Department's plots at the Auckland Exhibition and on the experimental farm of Messrs. J. Montgomery and Co., Christchurch, the white variety stands out prominently from the others. In the Auckland Exhibition plots the white lupin sown on the 3rd October of last year and dug up and weighed on the 10th December gave a total yield per acre, counting both foliage and roots, of 24·54 tons. The average height was 2 ft. 9 in. The roots had penetrated 9 in. into the soil, there being a good growth of nodules on the roots.

From the above it will be seen that the white variety of lupin, by reason of its remarkably rapid growth and its great wealth of succulent foliage, is an ideal plant for ploughing in. Of course, it is possible that the blue and yellow varieties may do better than the

white under certain conditions, and the variety tests will therefore be continued. The lupin should be ploughed in immediately flowers appear on the plant, as after the development of the flowers the stems become woody, and succulence, being conducive to quick decay, is an important element in effective green-manuring. According to the Baiclay Experiment Station, U.S.A., "before branching the lupin-plant produces very early in the season a terminal flower-spike, and in this state is quite succulent. When the first pod forms the whole plant branches freely, and becomes somewhat woody; these branches flower much later than the main

S. B. Taylor, photo.]

Nodule Development on the Lupin-plants in the Plot illustrated on the Opposite Page.

stem. Owing to this peculiarity it is found advisable to plough in the green manure at the beginning of the spring, or, if conditions of soil and climate make this impracticable, then to sow from two to four weeks later, in order to bring the period of first flowering nearer to ploughing-time, the plants being in the best condition for quick decay when the first flowers appear."

The lupin should not be planted too early in the spring where there is any danger of frost, as the young plants are very tender. The seed may be broadcast at the rate of 2 to 2½ bushels per acre, or may be drilled in rows 12 in. to 18 in. apart. In the latter case the seeding may be at the rate of 1½ bushels. Though the plants make slow growth at first, when thoroughly established the

S. B. Taylor, photo.] WHITE LUPIN IN THE DEPARTMENT'S DEMONSTRATION PLOTS AT AUCKLAND EXHIBITION.

growth is very rapid. In some countries lupins are used for feeding to sheep, but as a fodder they can hardly be recommended in this country. The lupin should rather appeal to the New Zealand farmer as probably the best of all crops for green-manuring purposes, especially on poorer soils, where the most important consideration is the creation of a good plant-producing medium. For this purpose, especially on sand areas in Germany and other Continental countries, it is largely grown. There immediately the plant comes into flower the crop is rolled, which greatly facilitates the work of ploughing in. The land is then prepared for winter corn. It is declared that under this system better crops of corn and potatoes are often obtained than by the application of farmyard manure.

Regarding the lupin, the "Standard Encyclopedia of Modern Agriculture" publishes the following: "The value of lupins in assisting in the accumulation of nitrogen in the soil has been made the object of a series of experiments by Dr. Schultz, in Germany. After trials with thirty leguminous plants, Dr. Schultz came to the conclusion that on the whole the most suitable crops to grow for soil-improvement are lupins (yellow, blue, or white), hairy vetch, kidney beans, peas; and it was estimated that any of these crops ploughed in at the time of flowering would yield on an average an amount of nitrogen about equal to that contained in from 9 to 15 tons of farmyard manure. In addition to the nitrogen furnished by ploughing the crop in there would be a large accumulation in the soil and roots of the plants, which would even exceed the amount yielded by the leaves and stems. Compared with other leguminous fodder crops—clover, lucerne, or sainfoin—the lupin is not so palatable. The juice has a bitter flavour, which at first sheep and cattle do not like, and pigs refuse to eat the plant. The nutritive value is also inferior to the above-named crops; this is due chiefly to the presence of a high percentage of indigestible fibre and a less amount of sugar. Hence we may conclude that the principal use of the lupin lies in its capacity to produce large crops of nitrogenous herbage on poor sandy soils, thus causing large accumulations of nitrogen and humus, and rendering unproductive land capable of yielding profitable crops of grain and roots."

In the reports of experiments conducted in different parts of the world, as well as in the records of practical experience which have reached this country, the blue variety has given the best results, being followed in order of merit by the yellow. Where the white variety has been mentioned it has been referred to as the "small white." The seed obtained of this last-named variety and grown in New Zealand, however, is quite outstanding in its superiority over both the blue and yellow—that is, for green-manuring purposes.

LEAD-POISONING IN STOCK.

B. C. Aston, F.I.C., F.C.S.

A fairly common cause of poisoning in cattle, and to a less extent in horses, is the lead compounds used in paints. This type of mineral poisoning differs from others inasmuch as animals are positively attracted to the one spot in perhaps a comparatively large paddock where the partially dry paint is to be obtained, and will greedily consume it, so that a very limited amount of the poison will effect a large amount of damage, the mortality being very high. Thus in my 1908 report to the Secretary of Agriculture, page 229, is the following :—

"*Lead-poisoning.*—The poisoning of stock by lead, which they obtain by licking the paint from old paint-tins, or off freshly painted houses, continues to occur. In cases examined, the liver of the deceased beast has given undoubted evidence of the presence of lead. In January, 1907, nineteen cattle were lost on a farm near Waikanae from this cause within a few days."

There is evidently something in lead compounds or lead paint which is particularly palatable to cattle. Thus an old paint-tin left carelessly in a paddock was in the case quoted responsible for the death of nineteen cattle.

Recently—December, 1913—a similar case occurred in the Wairarapa district, the owner losing six out of thirteen yearling heifers. Two days after the animals had been placed in the paddock one was found lying dead, and another was dying. The latter was killed, and a very small quantity of the stomach-contents was sent in for examination, and the remainder of the animals at once removed to another paddock. Two days later two more of the cattle died. The owner invoked the aid of the local Stock Inspector, who, acting under instructions from Dr. Reakes, Director of the Live-stock Division, visited the farm and reported on the 12th December, having examined the remainder of the cattle, nine in number. Four of these showed marked symptoms of poisoning—viz., dullness, inability to feed, staggering, diarrhœa, and semi-unconsciousness—whilst two appearing to be more seriously affected showed, in addition to the above, champing of the jaws, frothy and stringy mucus at the mouth; the evacuations, almost black in colour, also contained mucus. The Inspector immediately got the cattle into a yard and administered a pint of linseed-oil to each,

including those apparently healthy. A stimulant, whisky and milk, was also given to two showing signs of delirium. One of these was too far gone, convulsions and death supervening almost at once. Post-mortem examination of this animal showed typical lesions of irritant poisoning, the abomasum was highly inflamed, intestines inflamed and walls much thickened, lungs congested, &c.

Some delay occurred in the arrival of the sample at the Chemical Laboratory, but although the sample was a very small one, filling a 16 oz. pickle-bottle, I was able at once to detect portions of lead paint (giving the chemical reactions for lead), together with snippings of iron plate, and the owner was immediately advised by wire on the 9th December of the result of the examination, and that lead was probably the cause of mortality. No portions of the liver or other organs were received, so that it was not possible to obtain chemical evidence that lead had been absorbed.

The telegram announcing the result of the chemical analysis of the stomach-contents reached the owner the day after the Inspector's visit. He again visited the farm with Veterinary Surgeon Primmer, and a thorough search for anything likely to cause lead-poisoning was made. A quantity of old paint was found in the bottom of an old oil-drum, and the imprint of an animal's tongue was plainly visible on the partially dried paint. The portion of the drum containing the paint was only about 1 in. in depth, and consequently very hard to find in a 20-acre paddock knee-deep in grass. The owner states that the paint must have been in the paddock for at least five years, and the wonder is that cattle which have been grazing there did not partake of it before.

Advice to be followed in Suspected Poisoning Cases.

In view of the frequency with which chemical investigation in suspected poisoning cases is rendered abortive owing to the want of care in selecting and packing the specimens for analysis, the following instructions should be remembered by all farmers, Stock Inspectors, and veterinary surgeons.

Analyses in suspected cases of poisoning of stock are undertaken free of charge in all cases where a Veterinarian or Stock Inspector advises that course, otherwise a fee of at least £2 2s. is charged by the Analyst. It is hence desirable that when possible a farmer should consult the nearest Stock Inspector or Government Veterinarian when he suspects that his stock have been poisoned. In sending material for poison analysis the following rules should be observed :—

(1.) No metal of any kind should be allowed to come in contact with the material. Glass jars with screw metal caps must not be

used. Clean earthenware or glass jars fitted with cork bungs are the best receptacles for stomach-contents.

(2.) If possible, a sample of the food that the animal last fed upon should accompany the specimen.

(3.) No preservative of any kind should be added.

(4.) In the case of animals not larger than the sheep the stomach with the whole of its contents, or, in ruminants, a considerable quantity of the contents of the first, third, and fourth stomachs (each separate and labelled), should be sent; also the entire liver and spleen. In the case of larger animals a plentiful supply of ingesta (*i.e.*, stomach-contents) should be sent, together with large portions of the liver and spleen.

Specimens should be accompanied by a memorandum stating the circumstances attending the death of the animal, what food it was receiving at the time of death (sample to be sent), together with a concise description of symptoms, and any suggestions as to cause of suspected poisoning that the sender may have in mind.

A POTATO DEMONSTRATION.

In order to test thoroughly the value of planting good typical specimens of a variety of potato (cut and uncut) against the ordinary size used for seed purposes, special rows were set apart in this year's potato plots at the Weraroa Experimental Farm. Alongside the rows planted with the egg-sized type of seed rows were set apart for the cut and uncut seed, the tubers selected in each case being medium-sized table-potatoes, what would be regarded as very nice specimens of the variety—Up-to-Date—weighing about 4 oz. At the present time, nine weeks from planting, the uncut medium-sized seed is far in advance of the other rows, so far as development and robustness of haulms are concerned, while in contradistinction to the other rows there is not a blank. The final verdict will not, of course, be secured until the potatoes are lifted, but at present everything appears to favour the whole medium-sized seed.

A good illustration of the value of sprouting potatoes was provided at the Moumahaki Experimental Farm last year. On the 8th November sprouted potatoes were 8 in. to 10 in. high one month after planting, while the unsprouted sets were just appearing, the most forward being but 3 in. to 4 in. high.

DAIRYING ABROAD.

THE METHODS OF THE DUTCH MILK-PRODUCER.

Walter Wright.*

A visit to the first International Agricultural Show at The Hague, Holland, in September afforded me an opportunity of investigating the methods of the Dutch dairy-farmer. I made a visit to the great show in question as an invited member of the party of the Holstein Breeders' Association of Great Britain. The show extended over a period of eighteen days, and was organized and conducted by the Royal Netherlands Agricultural Society, which was granted for the purpose a State subsidy of £25,000. The results obtained amply justified the great expenditure involved.

A Dutch Dairy Farm.

On arrival at the Hook of Holland on the morning of the 8th September we journeyed direct to Arnheim for the purpose of visiting the Johanna Farm, Oosterbeck, owned by J. van Mesdag. The area of this farm is 873 hectares, or 2,182·5 acres, and which, with the exception of the woods still existing, has been reclaimed from waste land since 1909. Dairying is carried on to a considerable extent. The milk obtained from eighty-four pedigree cows is used for the town supply of Arnheim. The milk is not pasteurized, being delivered in hermetically sealed bottles direct from the dairy to the consumer. Butter is made from the surplus milk. The dairy herd consists of purebred (red and white) Meuse-Rhine-Yssel cattle. This breed is better adapted for poorer and higher lands than the black-and-white (Friesian) Holland cattle, and is also said to be less subject to tuberculosis. The "Three Rivers" breed is an old race of dual-purpose cows, the type to-day being low-set and rather large-bodied, and being closer to the ground but not so big in the body as the Dutch or Friesian breeds. The cows here are milked twice daily, but occasionally a cow might perhaps be milked three times daily for a few days just after calving. The stock bull at present in use is three years old, rather light-red in colour, with white legs. Rather a notable feature in the conformation of the bulls of this breed is the tendency to

* Inspector of New Zealand Dairy Produce in Great Britain.

fall away at the rump, the hind quarters not being so well developed as the fore quarters. This breed, now accepted for registration in the Dutch Cattle Stud-book, has of late years been greatly improved all round by judicious selection and breeding. All registered cattle have their registered number burnt into one of the horns.

The cows of the dairy herd at Johanna Farm averaged 3 gallons of 3·2 per cent. milk per day for the past year. The young cattle

Bird's-eye View of the Farm.

run out all the year round, except that there is a shelter-shed available for them to take refuge in rough weather; milking-cows are stalled continuously during the winter months. Attention is also paid to pig-breeding; the breeding-stock is a German breed of sows crossed with Yorkshire boars, the object being to get quick-growing, strong, heavy animals. Refuse potatoes, green stuff, and skim-milk from the dairy farm are used for pig-feeding purposes. About eight hundred hogs are fattened yearly. For the English market mostly Yorkshire hogs are grown, and sold at

Side View of Cow-stable.

about 165 lb., but for the French or German market the Yorkshire-German cross are preferred, the selling-weight being about 330 lb. to 350 lb.

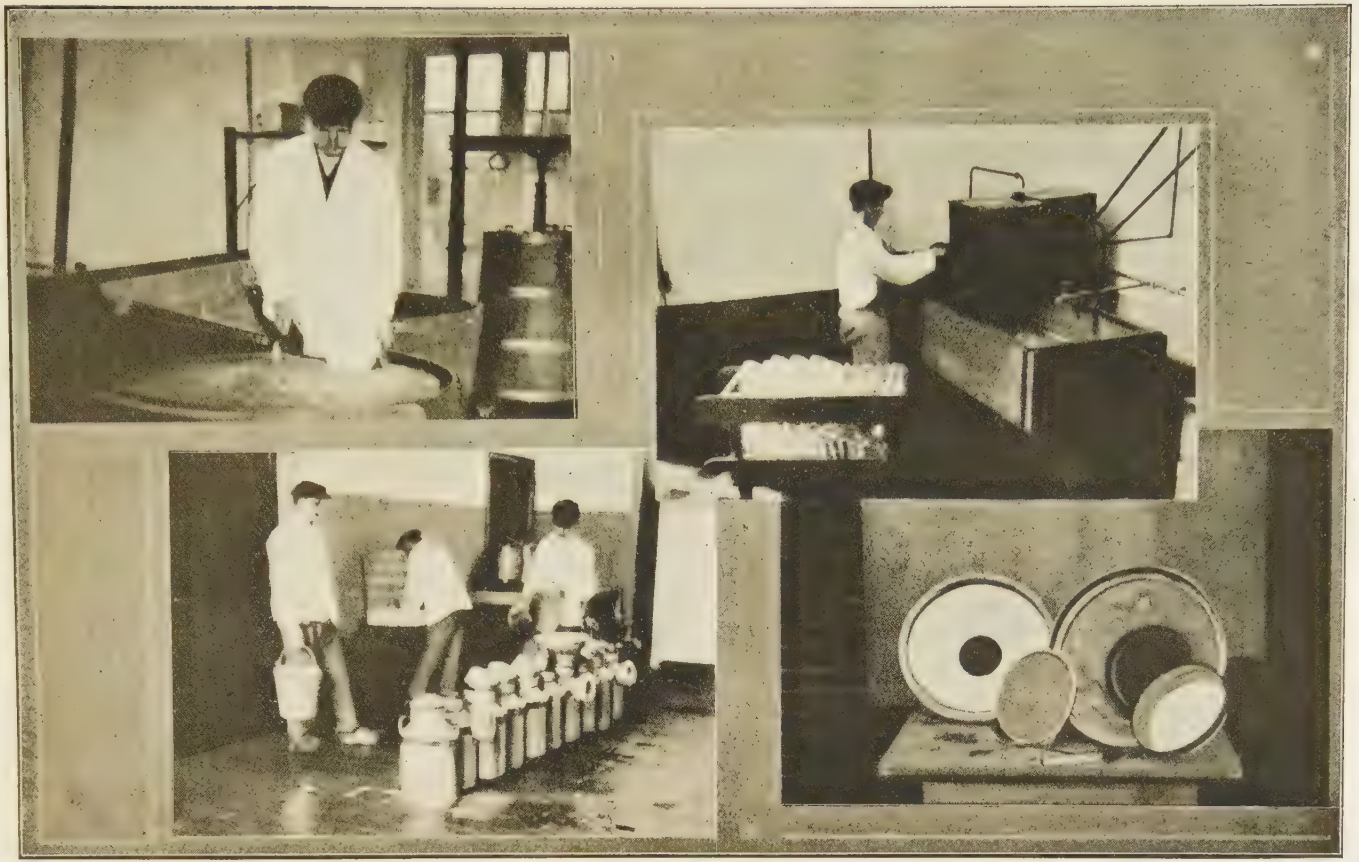
Up to the present time very little attention has been paid to sheep-breeding, but there is a small flock of the old Veluvian breed kept and pastured on the unreclaimed heath land. These sheep are able to travel considerable distances without much effort, and are very easy to keep. As soon, however, as the heath has been wholly reclaimed it is the intention to go in for the breeding of a more modern and profitable breed of sheep; but at present the old Veluvian sheep answers well enough.

Until a short time ago the waste land of Holland covered about 20 per cent. of the whole country, and very energetic measures are now being taken to bring this class of land under cultivation. This movement is receiving the financial support and sympathy of influential people and corporations in Holland. This, I understand, was the reason that prompted the proprietor of Johanna Farm to take part in this work of regeneration of the land in the vicinity of Arnheim. The soil here is of a very sandy nature, and one has to see the effect to appreciate the great efforts that have been made here during the last four years to bring approximately half of this large estate under cultivation. The creation of humus is effected principally by the ploughing-in of lupins.

About fifty persons are permanently engaged on the farm. Wages are about 7s. per week and keep, or 2s. per day without board or lodging. There is a considerable shortage of the necessary farm labour. The initial cost of this farm in the rough was about £5 per acre, and that portion of the estate now under cultivation is estimated to be worth about £16 to £17 per acre.

Cow-stable.

The method of cultivation is as follows: First year, clear and burn the heath, and then plough about 10 in. deep with a wide furrow. A special plough, the "Saxon," drawn by six large oxen,



Butter Kneading or Working.

Pouring Milk into Transport-cans through a Strainer

Cleaning the Bottles.

Carpenter's Shop. Bakery.

Grain-warehouse. Milk-wagon.

is used for this purpose, but sometimes steam ploughing is resorted to. The cost of ploughing with oxen is about £1 per acre; when a steam plough is used the cost amounts to about £1 13s. 4d. per acre. The approximate cost to bring it into arable land is about £6 13s. 4d. per acre. Lupins are then sown and ploughed under the following autumn. In the second year rye is sown in the autumn, and seradilla is sown broadcast over the rye in the spring. This is followed the third year by potatoes, samples of which were dug up from a field at the time of our

Sheep-pen.

visit. The plants were well grown and the tubers well developed. For manuring, the practice is to use 9 cwt. of basic slag and 6 cwt. of kainit per acre the first year, but in the second year the quantities of the same fertilizers are reversed — viz., basic slag, 6 cwt.; kainit, 9 cwt. Attention might here be drawn to the favour in which the use of seradilla is looked upon as a fodder plant in this district. When sown after rye, the rye is cut first in the fall, and later on the seradilla is cut, or in some cases the dairy cows are turned into the paddock to eat it down. Some-

times the seradilla is sown by itself and cut for hay, the yield being about 3 tons per acre. It is also sown sometimes with oats and clover. The quantity of seed sown to the acre is about 66 lb., and the price in this part of Holland is 36s. 8d. per 220 lb. Seradilla being a legume may be one of the factors in its selection for this district, where, as the soil is of poor quality, a selection of some such plant is desirable to bring about the restoration of nitrogen.

The accompanying photographs will give some idea of the up-to-date buildings and general appearance of the farm. The cowhouse (koestal) is the finest of its kind that I have seen. The interior

Friesland Cow, "Bosma II."

of the building should be specially noted. All outside stacks of hay, oats, and other cereals are covered with thatched roofs. These roofs are supported and guided by four uprights, so that they are easily lowered or raised by a block and tackle as required, the height being regulated by the quantity of fodder in the stack.

The Show.

As one might expect, the most prominent feature of the show was the competitions for the three recognized breeds of Dutch cattle, the classes being well filled. The selection of stock for shows in Holland is done by official Inspectors, and not by the owners of the cattle. This practice will seem strange to colonial

breeders. Another notable feature is the fact that the year's records of milk and butter-fat of individual cows are shown in the official show catalogue opposite the name of each animal.

My second day at the show was devoted to the dairy-produce, dairy appliances, agricultural implements, the provincial displays of farm-produce, and the working dairies on the showground. In the agricultural-implement section I noticed that English makes were a good deal in evidence. The collections of farm-produce, roots, &c.,

Pedigree Cow.—Meuse-Rhine-Yssel Breed.

did not, in my opinion, come up to the New Zealand standard of show quality; the potatoes and other roots were small, and the oats and rye were very strong in the straw. Collections of clovers, lucerne and other hays, linseed, fruit, and honey were also on exhibition. Large potatoes have not the same market value here as those of a smaller size.

The dairy-produce pavilion contained a very comprehensive collection of dairy-produce and dairy appliances. There were exhibits of many varieties of cheese, which were arranged in a cool chamber

in the pavilion; the public were able to read the awards through the glass sides of this chamber, but were not allowed to enter. Through the kind assistance of Mr. Eriks, of the Friesland Co-operative Export Association, I had the privilege of examining the prize-winning cheese exhibits in the various classes. The different varieties were as follows: Gouda cheese, of different weights and from different districts, seventeen classes; Edams, twenty-one classes. There were four classes for white and coloured Cheddars made in the month of July, 1913; and also four classes for Cheshire cheese, white and coloured; these were made during the second half of July, 1913, so that the cheese would be about seven weeks

Champion Friesland Bull, First International Agricultural Show. The Hague, Holland, 1913.

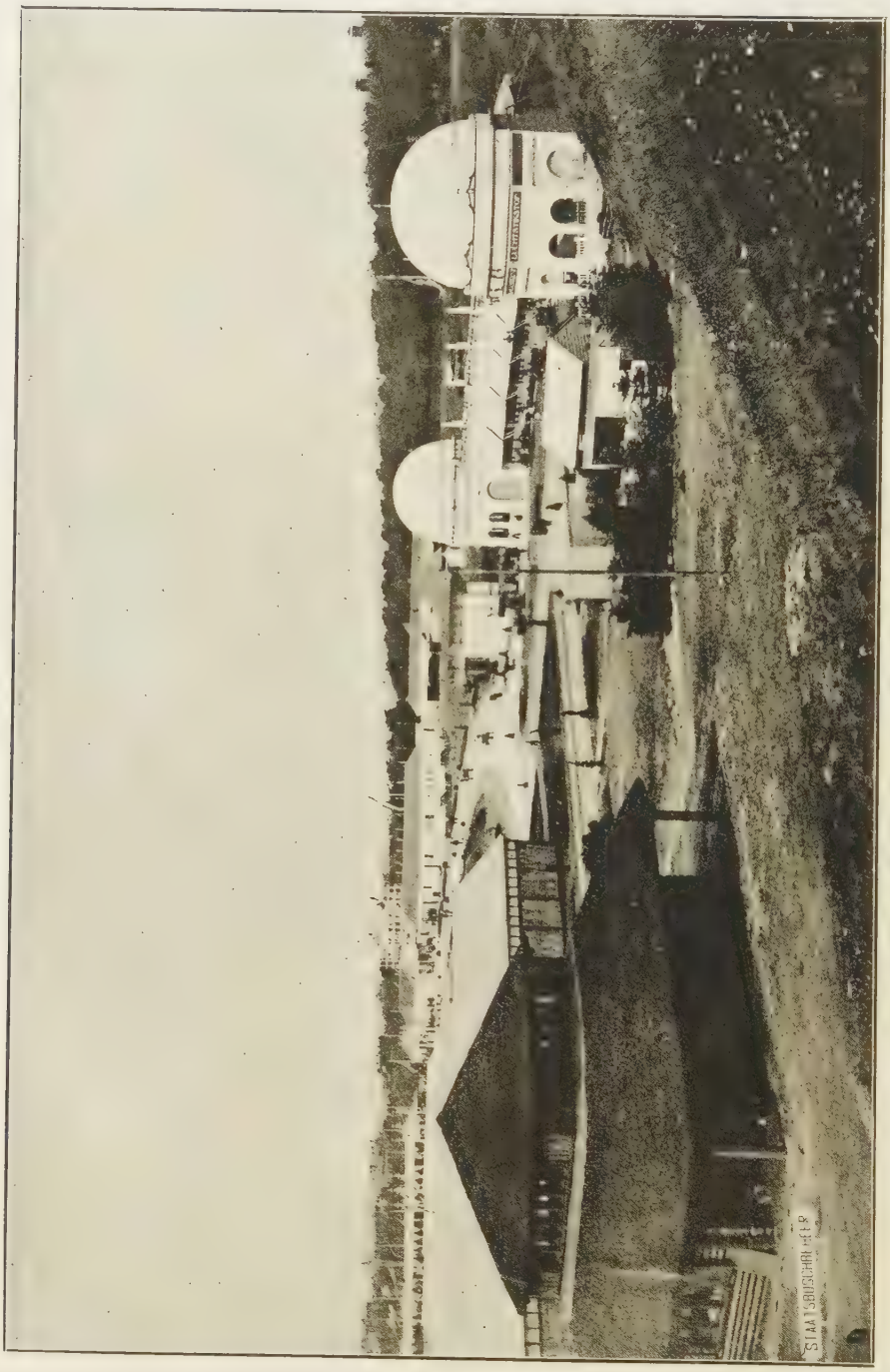
old at the time of my visit. From the different districts there were several classes for cheese, which are used for local consumption. These varieties of cheese are called Friesland, Leiden, and Delft, and are made from milk containing not more than 2 per cent. fat in the one class, and in another class not more than 1 per cent. of fat is allowed. These cheese are flavoured with cloves and carraway-seeds, and it requires an educated palate to appreciate the flavours. As regards the flavour and make of the Dutch Cheddars, some were of commendable quality, but others were rather indifferent in this respect. The Cheshire cheese were not of such a high standard of quality as the Cheddars. To the

outsider the system of scoring the dairy-produce exhibits appeared to be rather unusual. The points are as follows :—

	Maximum.
Form or shape..	10
Rind, skin, or finish	20
Aroma and flavour	30
Body and texture	40
	100

The butter classes were numerous, and were very tastefully arranged, one being very much impressed by the many different styles, shapes, and sizes of the various butter-packages. Another feature was the fact that while all the cheese entries were shown in cool chambers, the butter classes received no such consideration, but were subject to summer temperatures during the time the exhibition was open. In discussing with a gentleman the matter of cool storage for the dairy-produce, he informed me that it was found that a complete system of refrigeration for the whole of the dairy-produce would cost too much, so the result was that the contemplated erection of cool storage was only half carried out. In the class for export butters, the competing butters were scored some months previous to the show, and were then sent to different parts of the world, including India and the Dutch East Indies. These were again scored on being returned in time for the show. Classes were also arranged for the exhibit of bottled milk, condensed milk, powdered full milk, powdered skim-milk, rennet, annatto, &c. The whole of the dairy-produce section made a very attractive, instructive, and interesting display. Various makers of the different dairy appliances were well represented, a very notable feature being the very fine collections of analytical glassware, &c. These were very prominent indeed, and appeared to indicate that very considerable attention is paid to the scientific side of dairying by the people of this country. The usual collection of churns, separators, coolers, freezing plant, pasteurizers, &c., were to be seen, and were of fine workmanship.

Attention has again to be called to the fact that considerable quantities of dodder-infested red clover and cow-grass seed are being offered for sale in New Zealand. So far as bush burns are concerned, where these clovers are purely temporary occupiers of the soil a small amount of dodder, although objectionable, is not so serious as where the clover is intended to form a permanent or semi-permanent element of the pasture.



A View of the Showgrounds, First International Agricultural Show, The Hague, Holland, 1913.

View of the Dairy-produce Shed.

Friesian Cattle in the Show-ring.

FORAGE FOR SHEEP.

THE RUAKURA RAPE CROP.

Primrose McConnell.

Of all forage plants rape still holds first place as a quick lamb and sheep fattener. It has many merits, among which are early maturity and low cost of cultivation and manuring. It is also a soil-improver, and one of the best crops for ploughing under as green manure. Grass and clover seeds sown after this crop have every chance of making an excellent pasture. As a forage for breeding-ewes just previous to mating-time it has no equal, and as green fodder it is also excellent for pigs. The writer has turned lambs on to rape six weeks after the date of sowing, and the plants were then 3 ft. in height.

It is true this plant is not blight-proof, but much may be done by cultivation and early sowing to remedy this evil.

The use of a ridger is the first essential to success where the land is cold and the seasons comparatively late. To sow rape early on the level of such land means, in nine cases out of ten, complete failure. It is granted that the ridger cannot be used in every case; neither is it advantageous on many large sheep-stations to sow early. The writer has in view, however, the comparatively small farm where sheep-raising (early fat lambs in particular) is carried out on intensive lines. To ensure a maximum of success, such a farmer must have his lambs early on the market. In order to attain this end he must have his rape sown early. For the North Island the first or second week in September is late enough. The crop will then be fit for consumption early in November, and the first growth will be consumed and the lambs all off fat before there is any danger of blight. The second and third growths, although not so good for lamb-fattening, may be used for fattening off the ewes; and the last growth will be of great benefit if ploughed under.

Many plants have been put on the market that, according to seedsmen's advertisements, were going to revolutionize the whole forage-crop question and put rape comparatively in the shade; but the latter still takes the lead for the purposes above mentioned, and there is every likelihood that it will continue to do so.

It is much to be regretted that my experience with silver-beet does not confirm reports from the South Island, and as far as this district is concerned I have no hesitation in stating that it can in no way be compared to rape as a lamb-fattener. The report to the effect that lambs prefer silver-beet to any other feed I simply cannot understand. The cost per acre of silver-beet is nearly double that of rape, and it takes fully a month longer to mature, which leaves it out of the list of early-fat-lamb forage crops. The variety of beet used this year was the light-coloured with the broad midrib. During the whole time that the lambs were on the rape plot the weather was wet, but while on the silver-beet it was dry and ideal for fattening. It is only fair to state, however, that my experience with silver-beet has proved it to be a soil-improver and a drought-resister. Last season a small area of this crop was fed off with wethers, the results being better than those obtained from the lambs this season; but in comparison with the results gained from rape grown in the same field under similar conditions they were as 5 is to 100. It is realized, however, that the climate and soil of the South Island may be more suitable for the cultivation of silver-beet than those of the North Island.

Rape may be successfully grown after any crop, but it is unwise to grow turnips and rape, one immediately after the other. Although it may succeed for a time, it will in the end encourage or foster the fungoid diseases which attack this family of plants. In a rotation probably the best time to grow rape is after a cereal crop, and then sow down the grasses and clovers when the rape is finished. This season the main rape crop at this station was sown in No. 29 paddock, which is in very poor condition and contains many varieties of soils. In some places the iron-pan comes close to the surface, in others there is a considerable depth of very poor, light black soil with a pumicy clay subsoil. The previous crop was oats.

In February the whole field was ploughed to a depth of 5 in. and a catch-crop of mustard sown. This was only a small crop, and the land was again ploughed in May to a depth of 10 in. During July and August it was thoroughly cultivated and harrowed, and from the 4th to the 11th September the seeds and manures were sown with the double ridger in rows 27 in. apart, the land being previously rolled with a Cambridge roller. The Essex variety was sown at the rate of 3 lb. per acre, to which was added 4 oz. of mustard. Had the seeds been sown on the flat the crop would undoubtedly have been a failure, as the weather was exceptionally wet during the whole period of growth, the ridges on

several occasions being almost covered with water. The rows were several times horse-hoed during its growth, and this is a process which all intensive farmers would do well to adopt, as it acts beneficially in many directions. In spite of the circumstances of poor soil and unsuitable weather the crop was on the whole a good one, and at the date of writing—24th January—the third growth is being fed off.

Various manures were experimented with, but as the soil of this field is so variable it was quite impossible to arrive at the correct results from each manure by weighing; but by putting the maximum crop at 100 the manures may be placed in the following order, cost and yield taken into consideration:—

Seychelles Island guano and sulphur	100
Seychelles Island guano	95
Superphosphate and bonedust	90
Superphosphate and sulphur	85
Superphosphate	80
Basic slag and superphosphate	75
Basic slag	70
Sulphur	70
No manure	40

Cross-dressings of nitrate of soda had no effect. It is often stated that rape responds to a heavy dressing of fertilizers. After a very considerable experience, however, the writer has been compelled to change his opinion on this matter, for he is quite convinced that on fair soil, aided by good cultivation, a maximum crop may be grown by an application of from 1½ cwt. to 3 cwt. per acre of phosphatic manures, or a mixture of phosphatic and potassic manures if the soil respond to such.

It would be foolish to contend that the future will not produce a better plant than rape for the intensive sheep-farmer, but as yet it is not in sight.

On the 1st January, 1914, the first Australasian Pure-seed Act—that of Queensland—came into operation. This Act compels seed-vendors to supply with all seed sold an invoice stating specifically the impurities contained therein and the germination capacity of the seed. This invoice constitutes a warranty by the vendor that the seeds supplied are of the kind or kinds specified and contain no greater amount of impurities than is prescribed under the Act. Special provision is made for any authorized officer to have power to inspect seed in store or during transit, and to take possession of any seed deemed unfit for use.

BUSH SICKNESS.

FIELD EXPERIMENTAL AND DEMONSTRATION WORK.

C. J. Reakes, D.V.Sc., M.R.C.V.S., and B. C. Aston, F.I.C., F.C.S.

The farm established for experimental and demonstration purposes at Mamaku has now been in occupation since September, 1912. When first taken possession of, preliminary operations in the shape of the application of top-dressings had to be carried out before the place could be properly stocked, and, in order to enable this to be done in such a way as to render it possible to arrive later at more or less definite conclusions as to which top-dressings produced the best results, subdivision of a portion of the area into moderately sized paddocks was necessary. Some 160 acres was thus subdivided into eleven paddocks of varying areas. These were respectively top-dressed as follows:—

Paddock No. 1, about 5½ acres: Ploughed, and manured with blood and bone, 5 cwt. to the acre, applied in September, 1912, and sown down in oats. Subsequently, on 18th April, 1913, it was laid down in grass, and top-dressed with 5 cwt. of guano to the acre.

Paddock No. 2, about 12 acres: A control paddock. No top-dressing applied.

Paddock No. 3, about 4 acres: Top-dressed with hydrated iron oxide, as used at gasworks, at the rate of 5 cwt. per acre, 2nd June, 1913.

Paddock No. 4, about 10 acres: Top-dressed with 5 cwt. basic slag to the acre, 28th October, 1912.

Paddock No. 5, about 12 acres: Top-dressed with 2 cwt. basic slag and 2 cwt. superphosphate to the acre, 30th October, 1912.

Paddock No. 6, about 10 acres: Top-dressed with 4 cwt. superphosphate to the acre, 27th October, 1912.

Paddock No. 6A, 2 acres: Sown in oats.

Paddock No. 7, about 9½ acres: Top-dressed with iron sulphate, 1½ cwt. per acre, 20th October, 1912. Subsequently, on 17th April, 1913, 2 areas of about 1 acre each were top-dressed with 6 cwt. superphosphate to the acre. This was done after further experiments elsewhere had been brought to a conclusion. These had

indicated that sulphate of iron alone was not so satisfactory a top-dressing as it had previously been believed to be.

Paddock No. 8, about 9½ acres: Top-dressed with 2 cwt. sulphate of iron to the acre, 25th October, 1912, and 5 cwt. guano to the acre, 15th May, 1913.

Paddock No. 9, about 12 acres cleared: Top-dressed with 2 cwt. iron sulphate to the acre, November, 1912. Subsequently, on 17th April, 1913, two areas of about 1 acre each were top-dressed with 7 cwt. superphosphate to the acre.

Paddock No. 10, about 40 acres: Two quarter-acre areas were top-dressed with superphosphate at the rate of 7 cwt. to the acre on 17th April, 1913, and later, on 4th November, 1913, the whole paddock was top-dressed with 2 cwt. basic slag and 2 cwt. superphosphate to the acre.

Paddock No. 11, about 40 acres: Three small areas of about ½ acre each were dressed with superphosphate at the rate of 7 cwt. to the acre on 17th April, 1913, and on 5th December, 1913, the whole paddock was dressed with 5 cwt. guano to the acre.

The remainder of the farm, 70 acres of which are still in standing bush, was left without any top-dressing. The portion not in standing bush has been felled, burned, and surface-sown; but the ground is thickly encumbered with stumps and fallen logs. Feed here was plentiful.

STOCK.

The top-dressed paddocks Nos. 1 to 9 were stocked with twenty two-year-old heifers in calf, and twenty-five four-tooth Romney cross ewes, with which a Romney ram was put out in April, 1913. When winter came on the feed became short, and the heifers were given practically the run of these paddocks, the ewes being changed from paddock to paddock—sometimes to land not top-dressed—as was required in order to make the best use of the feed available. It was noticeable that the heifers seemed to prefer the superphosphate paddock, an instance of instinctive selection which helped to confirm the opinion of the value of superphosphate as a top-dressing for bush-sick land, which was formed as a result of the earlier cattle experiment at Te Pu. Both heifers and ewes did well throughout the winter, and in spring calves and lambs were born, the twenty-five ewes producing thirty-five lambs. A small crop of oats had been grown in the preceding summer and converted into oaten hay, which was utilized for the heifers after they had calved. No food of any kind of outside origin was given. Licks containing iron (ferrous iron sulphate), and salt, were

provided for these animals. In addition, the non-top-dressed area was stocked with thirty steers, eighteen months old, put on in February, 1913, and later, in April, forty two-year-old heifers in calf were added. A steer, four years old, which had been used in the previous experiments carried out at Mr. Martin's farm at Mamaku, and which had become badly bush sick, was also placed in the top-dressed paddocks, and dosed daily with syrup of iron phosphate. This animal held his own right from the time he was brought to the farm, and after a few weeks began to improve steadily. He is now in excellent health and condition. One feature in connection with this animal was the fondness he evinced for his medicine (due probably to its pleasant taste), as shown by

Bush-sick Cow before going on the Top-dressed Pasture in July of Last Year.

his running across the paddock to meet the attendant when he came out to administer it. The medicine was given daily over four periods—viz., from 14th March, 1913, to 8th April, 4th May to 30th May, 14th June to 22nd July, and 27th August to 28th September. Later, in July, 1913, an empty cow, in almost the last stage of bush sickness, belonging to Mr. Clinkard, jun., a neighbouring settler, was brought to the farm, placed on the top-dressed paddocks, and dosed with the iron-phosphate solution. The medicine was given daily from 28th July to the end of September. This animal completely recovered, and is now in prime condition, fit for the butcher (see photo). This medicinal treatment was undertaken specifically for the purpose of gaining further practical

knowledge in support of the opinions held as to the cause of bush sickness. It must not yet be concluded from the successful results attained that in general farming practice bush sickness can be combated economically by medicine alone. Soil-treatment would appear to be by far the more important

Results up to Date.

All the steers and heifers in the area not top-dressed had to be removed in August and September, several having fallen off

The same Cow at the Present Time after grazing on Top-dressed Land, and being medicinally treated with Syrup of Iron Phosphate.

considerably in condition, while some of the heifers were markedly bush sick. A comparison between these heifers and those on the top-dressed paddocks clearly showed that the latter had grown and developed better and were in better condition than the others. This alone was a most satisfactory indication of the improvement in the nutritive character of the herbage resulting from the top-dressing, especially when it is noted that these steers and heifers had more feed and better shelter than had those on the top-dressed paddocks, and, further, had access to the standing bush. It is

popularly believed in the district that cattle which can get into the bush will keep healthy longer than those which cannot do so. The steers were sold at a profit of slightly over £1 per head. Those of the heifers which were fit were also sold, the balance being placed in healthy outside country; of these, nineteen have since been taken back to the farm and placed in the top-dressed paddocks, where they are now doing well and are rearing their calves.

The twenty heifers originally placed in the top-dressed paddocks have continued to do well, save one, which commenced to go off in condition. This animal was placed upon the iron-phosphate treatment, and is coming back to normal health. All are being milked, the cream being separated on the place and sent to the Ngongotaha Factory. These milking heifers have been divided up among the top-dressed paddocks, and records are being kept of their condition from month to month, and also of their milk-yield. When completed, these records should afford valuable information as to the relative value of the different top-dressings applied. All the calves have done well. They are fed on the separated milk, with a commercial calf-food added.

The ewes and lambs did well until the latter part of November, when the first indications of bush sickness were noted among them. During the next three weeks others became affected, and consequently the whole were removed to healthy country.

Summary.

The information so far gained may be summarized as follows:—

(1.) That the most susceptible class of dairying cattle—viz., first-calf heifers—can be kept healthy and made profitable for dairying purposes, for at any rate a considerable time, when grazed upon paddocks suitably top-dressed. It remains to be seen, of course, whether these animals will keep healthy throughout the milking season; but even so far as we have gone the results must be looked upon as being distinctly good.

(2.) That animals of the same age and class will develop bush sickness in a few months when grazed upon similar land not top-dressed, even with plenty of feed, good shelter, and access to standing bush.

(3.) That syrup of phosphate of iron in solution is a valuable curative agent when given daily over a sufficiently long period.

(4.) That breeding-ewes grazed upon suitably top-dressed paddocks will remain healthy over a much longer period than these animals will do when kept upon land not top-dressed.

It cannot be suggested that conclusive results have yet been attained, so far as the attempt to solve the problem definitely by soil-treatment is concerned. We shall be able to speak with more definiteness a few months hence, but it can reasonably be claimed that a further step forward has been made, and that the prospects are very encouraging. The sheep gave what was, in a sense, a disappointing result, though not an unexpected one. And, after all, it must be remembered that there are in the near neighbourhood of the admittedly bush-sick area considerable tracts of reputedly healthy land where lambs cannot be successfully reared to maturity, though adult sheep and cattle do well enough, and the land can be profitably farmed. Considering that the ewes on the experimental paddocks reared their lambs and remained healthy for a period of eleven months when it is a known fact that sheep on the bush-sick area usually develop the sickness when only four months have elapsed, it will be recognized that the experiment is of more value than might appear to those not fully acquainted with the position, more especially when it is stated that for about a third of the period they were running on land not top-dressed. Present indications point to results being achieved which will enable the affected land to be profitably utilized for cattle, even for dairy stock, but that it will take some years of occupation, good farming, and cultivation to render it suitable for sheep-breeding.

The excellent results obtained from treating sick cattle with syrup of iron phosphate are clear and definite, and this in itself is most satisfactory, especially in the fact that it supports the opinion previously formed as to the cause of the trouble.

The immediate supervision of the work of the farm has continued in the hands of Mr. W. T. Collins, Government Veterinarian, and Mr. R. Alexander, Inspector of Stock, both of whom have done excellent work. In this they have been greatly aided by the efficient and thorough manner in which Mr. R. A. Jackson, the Farm Manager, has carried out his duties.

Veterinary Experiment Station.—The New South Wales Department of Agriculture has written to the New South Wales Stockowners' Association to say that it is the intention of the Government to establish a thoroughly equipped veterinary experiment station under a veterinary pathologist, and one of the most important duties of the station will be the manufacture of vaccine for anthrax, blackleg, pleuro-pneumonia, and other diseases of stock.—*Sydney Farmer and Settler.*

SILVER-BEET.

EXPERIMENTS AT WERAROA.

James Drysdale.

The growing of some plant that will not be subject to the pests which have been responsible for so many failures in rape and turnip crops during recent years is one of the pressing problems of the day, especially to the sheep-farmer and lamb-fattener. In the endeavour to provide a solution experiments were conducted at the Weraroa Experimental Farm last year. Silver-beet was tested against certain roots and kale, the sheep being allowed free range of the several test crops in order to test the relative palatability of these. A field of 15 acres, in areas from ¼ acre to 4 acres, was sown to the following: Swedes—Sutton's Queen, Up-to-Date, Magnum Bonum, Bronze-top, and Crimson King; soft turnips—All-the-Year-round, Centenary Green-top Hybrid, Red Paragon, and Yellow Globe; mangels—Golden Tankard, Golden Globe, Intermediate, and Prizewinner; chou moellier; and Buda kale. These were sown from the 8th to the 12th December, 1912.

A wire-netting fence was run across the field, taking in a small area of all the varieties. The first test of feeding was to ascertain which variety the sheep would prefer, and was carried out on this break. The sheep had a free run out on a grass field, the silver-beet being on the opposite side of the field. Not only for the first few days did the sheep overlook and trample over the above crops until they came to the silver-beet, but continued to do so until the beet was eaten down to the ground. Following in favour were mangels and chou moellier (about equal); and then came swede turnips (Sutton's Queen for preference). Buda kale and soft turnips followed next in order.

The sheep were a representative lot for feeding, being ewes, lambs, and wethers. It has invariably been the practice to sow soft turnips in preference to swedes for old ewes and lambs. Although some of the ewes in this test were past full mouth, they stuck to the swedes until nothing but the shells were left.

The next feeding test was with silver-beet alone. In the 1911–12 season 1 acre was grown at Weraroa, but last season

3 acres were under trial. The plants made good growth, and were healthy and free from pests. The beet was sown with Storry's double ridger. The manure used was 2 cwt. of superphosphate per acre, and 4 lb. of seed per acre was sown. The plants were thinned out to 12 in. apart, and scarifying, as required to keep the weeds in check, was carried out until the plants became too large.

On the 14th March fifty shorn lambs were purchased at 8s. 6d. On the 18th March these lambs were put on the beet, and eleven of them were marked and weighed. The following table gives particulars as to dates of weighing, increase in weights, number of days on beet, and number of days off beet during weighing-periods :—

Date.	No. of Sheep.	Weight in pounds.	Average.	Gain per Head in pounds.	Periods weighing.	Days off Beet.
March 18 ..	11	681 1/12	61 11/12	..	..	..
,, 25 ..	11	798	72 6/11	10 1/2	7	..
April 2 ..	11	826	75 1/11	2 6/11	15	3
,, 10 ..	11	879	79 10/11	4 9/11	23	2
,, 17 ..	11	957	87	7 1/11	30	..
,, 26 ..	11	883	80 8/11	(loss) 6 8/11	39	..

Total number of days since going on beet, 39 ; total number of days off beet, 5 ; total number of days on beet, 34.

For the first weighing-period the weather was excellent, being most favourable for feeding. This assisted, no doubt, to a great extent to produce the satisfactory increase of 10½ lb. per head for the first seven days. On the 17th April twenty-six were fat. After this date the weather-conditions were not favourable, there being rain with severe frosts, and the ground was very wet. The next weighing, after nine days on the beet, showed a loss of over 6 lb. per head. The beet was then old, and was beyond the feeding stage. The balance of the lambs began to scour and had to be taken off.

It is quite evident that silver-beet must be fed off in the early stage of growth, and not later than April. If sown at the end of October it could be fed off in January, and this would allow ample time for at least another good feeding. The scarifier could then be run through the rows to keep the weeds in check during the winter months, which would enable the plant to produce a large amount of early spring feed, with probably another feeding in January. Nothing definite can be said with regard to the amount of continuous feeding the second year's growth will produce, but there is no doubt that the weather-conditions in the North

Island during the winter months would not prevent the plant, which appears to make a vigorous growth after being fed down, from making enough growth to cause it to be sufficiently forward for early feeding. This would be very acceptable for hoggets or old ewes. The frosts do not appear to damage the young growth, but completely destroy, for feeding purposes, the old matured stems.

A further experiment with the feeding of beet, covering all the plants tested in the first experiment, had quite an opposite conclusion. The sheep (250) were again a representative lot, including ten of the cull lambs from the beet feeding. The swedes were first in favour, and for the first day's feeding no attention was paid to any of the other plants. Following this came chou moellier, mangels, Buda kale, with silver-beet last. A great amount of beet was trampled down and wasted, and the only part the sheep appeared to care for was the centre stems, which were of a late growth.

A CANTERBURY EXPERIENCE.

A. Macpherson.

In 1912 Mr. A. E. Jones, of Cashmere, near Christchurch, sowed about an eighth of an acre with light-green silver-beet. The crop was sown on virgin soil in rows 24 in. apart. It came away remarkably well. The feeding of it to cattle commenced about the beginning of May of last year. There were five milk-cows and seven calves, and, along with hay, the silver-beet lasted until the end of September. From the beginning of October to the end of December the stems were fed to a sow with a litter. The crop was then allowed to go to seed. The milk-cows did well on the beet. They kept up their supply well, did not scour, relishing the feed very much; in fact, they appeared to like the old leaves quite as well as the new. The stems were fed to the pigs along with skim-milk and pollard, and they relished the stems. The quantity fed daily to the cows and calves would be about three barrowfuls night and morning. In addition to this the family used the silver-beet as a table vegetable. The crop was green all through, winter frosts having no effect upon it.

A further area of silver-beet has been sown at the Ruakura Farm of Instruction. The area under this crop at Ruakura this season will enable a thorough test of its quality to be made.

RENEWAL OF SOUTHERN HILL PASTURES.

Sydney M. Taylor.

It is gratifying to be able to record the improving condition of many mountain pastures in northern Otago. Back-country runs which, with overstocking, injudicious burning, and the depredation of the rabbit, had their carrying-capacity considerably reduced are showing a greatly improved pasturage, owing largely to more careful management, coupled with a diminution of the rabbit nuisance. A feature of the changed condition is that the native grasses are strongly reasserting themselves, the blue-tussock and the blue-grass, the two most valuable of our native grasses, being particularly prominent. Spiked blue-grass, of Australian origin, is spreading considerably on much of the dry semi-depleted country. The improvement in hill pasturage, brought about by simple means available to owners of all such country, suggests the great possibilities in the big area of mountainous territory in the south. The feature of the regenerative work in progress is light stocking in the autumn, thereby giving the grasses an opportunity to seed and extend their hold on the land.

OBLIGATION TO CLEAR WEEDS.

In delivering judgment in a case of failure to eradicate foxglove from a property in the Pelorus Valley, Mr. F. O'B. Loughnan, S.M., said he intended to inflict heavier penalties in these cases. Some property-owners were getting to look upon a small fine as merely a license to let the noxious weeds remain undisturbed on their land. The present case clearly showed that adjoining landowners must be protected. It was not right where one man cleared his land of noxious weeds for his neighbour to be let off with a small fine. In future he would make fines sufficiently heavy to make it worth while for occupiers of property to clear their land. He hoped the Press would emphasize this point in the interest of the farming community as a whole. Defendant would be fined £7, with costs 7s., and if he came before him again for foxglove the fine would be made much heavier.—*Pelorus Guardian.*

SPANISH LUCERNE.

VALUE DEMONSTRATED IN CENTRAL OTAGO TESTS.

An experiment to test different varieties of lucerne in Central Otago has been conducted by Mr. G. M. Marshall, a fruitgrower, of Earnscleugh, in conjunction with the Department. Reporting on this work Mr. Marshall says,—

"The test was made for the purpose of ascertaining which varieties of lucerne would be the most suitable for this district. Each variety received the same treatment as regards soil, inoculation, &c. Lime was applied at the rate of 30 cwt. per acre, and inoculated soil at the rate of 200 lb. per acre, the seeding being about 15 lb. per acre. All the varieties germinated well, but it was soon evident the Hunter River and Spanish varieties were going to lead. No water was applied for irrigation purposes, and growth was left untouched. The plants went back a good deal during January, 1913, but with the advent of autumn rains growth again commenced, and was left uncut, to test the effect of the colder weather. Turkestan, French Province, and Peruvian varieties were cut down early with frost, and all the others except Spanish and Hunter River went down with later frosts. The Spanish particularly remained green all the winter, and was the first to start into fresh growth in spring. To-day, 8th September, 1913, I measured the growth—11 in. long; while Hunter River is about 8 in., and the other varieties are straggling along in the rear. I intend further to test the Spanish and Hunter River varieties, as their leafage is very heavy."

Reporting further on the Spanish variety Mr. Marshall writes, "This variety has probably not been long enough under test to merit any extensive support, although to all appearances it is a variety that will hold its own with the best. The leafage is somewhat lighter in colour than other varieties, but the weight of leafage is greater than in most other varieties. Its special advantage is perhaps in its early starting into growth in the spring of the year, while any growth left on the plants in the autumn withstood the hard frosts of winter without any material damaging effect, while most other varieties were cut down. The general appearance of the Spanish lucerne is a lightish green, with strong imposing rounded leaflets, the stooling quality being medium; it is short-jointed and heavy, and is one of the best varieties where quantity of green fodder is required."

1. Spanish. 2. Hunter River. 3. Peruvian. 4. Turkestan
5. Arabian. 6. American. 7. Hungarian. 8. French Provence.

GREEN'S RUAKURA OAT.

Primrose McConnell.

[The oat referred to in the following article from the pen of the Manager of the Ruakura Farm of Instruction has hitherto been known as "The Ruakura Rust-resistant Oat," but it has been found that many farmers have taken the term "rust-resistant" to mean "rust-proof," and as the new oat, though highly rust-resistant, is not quite rust-proof, it has been decided that, in order to prevent misunderstanding, the words "rust-resistant" shall not in future be included in the name. The oat was selected by Mr. A. W. Green, the Horticulturist and Plant-breeder at the Ruakura Farm, and I therefore consider that his name should be permanently associated with the variety. It has accordingly been decided that the official name shall henceforth be "Green's Ruakura Oat," and I am sure that for many years to come numerous farmers who will grow this oat will remember with gratitude the man to whose keenness and zeal the variety owes its origin.—F. S. Pope, Secretary of Agriculture, Industries, and Commerce.]

This is now the fifth year in the life of the Green's Ruakura Oat.

The season has been an exceptionally trying one—in fact, the worst year for rust and blights within the writer's experience—and the fifth year is generally considered to be the crisis in the life of any new production of this kind.

Last autumn a large number of one-pound test samples were sent out to farmers in both North and South Islands. Up to date —7th February—nearly one hundred reports on the results obtained from these samples have come to hand, and, taking all things into consideration, they are eminently satisfactory.

Out of this number only eight report rust, and the majority report a phenomenal yield from the pound of seed. Many of the experimenters are enthusiastic over the results, and applications for a supply of seed are coming to hand.

At this farm—Ruakura—100 acres have been harvested in fine condition, despite the fact that the high winds and heavy rains during November and December lodged a considerable area very badly. Three fields (about 50 acres) in particular were flattened

down nearly two months before harvest-time; yet rust was almost entirely absent, and the straw is perfectly bright.

In two fields (late sown) rust was in evidence, but when reaped and stacked the straw and grain were remarkably bright, and in no case was the grain affected.

A number of other varieties were tested, including Algerian and Red Rust Proof, but all were rusted so badly as to be entirely unfit for use, and in the majority of cases the ears were mere husks.

Nearly 3,000 bushels of the new oat have already been threshed, and, considering the season, the yield is eminently satisfactory. One crop, grown entirely without manure and the previous crop (swedes) carted off and consumed in another paddock, yielded an average of just on 80 bushels per acre. One plot in the same field which has had no manure for two years yielded 76 bushels per acre. The land was accurately measured, and the grain was accurately weighed.

Any one acquainted with the Ruakura soil will admit that the above yield in a season such as has been experienced on this occasion is extremely gratifying; and it may be safely accepted that no other oat would have given such results under similar conditions.

At the same time, the writer wishes to impress upon all intending purchasers that the Ruakura oat is not rust-proof, and was never claimed to be so; and it may be more suitable for the North Island than the South; but our experience at this farm for five years, which is confirmed by the average report that has come to hand this season, places its value beyond any doubt; and for North Island conditions in particular the writer believes it to be far ahead of any other oat on the market.

It is also excellent for feeding-off purposes; in fact, it should be sown early and fed off at least twice during the season, taking care that the last feeding-off is not done too late, and never when the land is wet.

The oat is now on the market at the price of £1 per bushel. To the uninitiated this may seem a high price, but the work of selection is costly from beginning to end, and to hand-pick the whole of this season's crop will mean an outlay of at least £1,500.

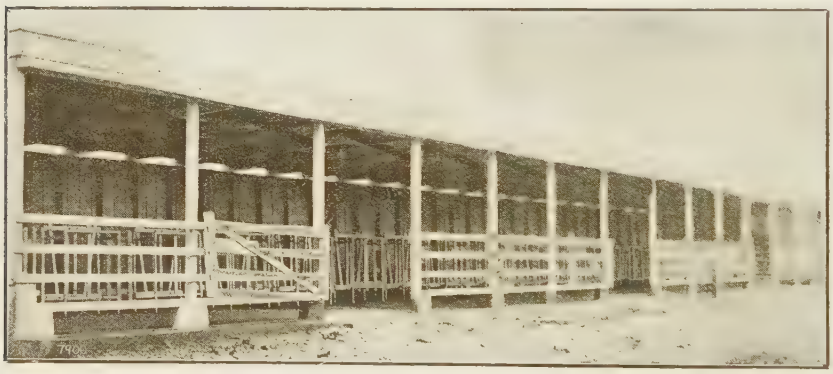
Intending purchasers are requested to forward their orders, accompanied by remittance, to the Manager, Ruakura Farm of Instruction, Hamilton East, as soon as possible, in order that an idea of the quantity required for seed may be arrived at.

An inspection of both grain and straw now at Ruakura is cordially invited, and, indeed, is very desirable.

REARING THE CALF.

James Drysdale.

Notwithstanding the importance of the proper care and management of the calf in the development of profitable dairy stock, it is a phase of dairy-farming which is too often neglected, though it is now attracting more attention owing to the enhanced value of well-reared cattle and the greater appreciation of deep-milking dairy stock. Good food alone is not sufficient. The diet should be nutritious and ample; it should be given in clean utensils; the feeding should be regular; and every care should be taken to see that each calf receives its proper share. Proper protection from extremes of weather is essential.



E. B. Levy, photo.] General View of Weraroa Calf-pens.

There is much controversy as to whether whey is much inferior to skim-milk for calf-feeding; but this is not of such great importance as that the material should be sweet and be properly fortified, the proportion of substitute for the extracted materials being necessarily higher in the case of whey than in that of skim-milk.

Too much importance cannot be attached to making the food appetizing in the direction of having it in good condition and feeding it in thoroughly clean vessels. The farmer who desires to rear robust stock will have to realize that whole milk should be fed for at least two weeks. Skim-milk may then be gradually substituted, until at the end of, say, three weeks the whole milk may be discarded; but—and it must not be forgotten—something should be added to the skim-milk to take the place of the butter-

fat. Experiments to determine the best material for this purpose are now in progress at Weraroa. One of the methods to be tested will be the feeding of crushed oats fed separately from the skimmed milk, this being checked by the feeding of some calves on whole milk throughout the test. The substitute for fat which has given the best results at Weraroa so far has been linseed jelly. This season, however, will be the first time that crushed oats have been tested.

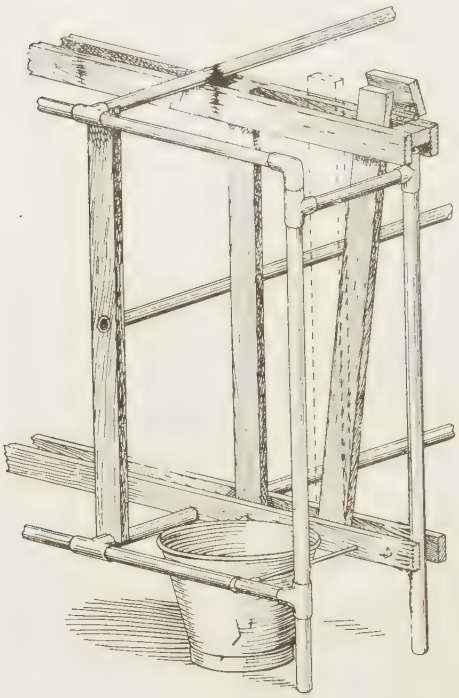
The importance of providing a separate bail, so that each calf may feed undisturbed, cannot be overestimated. The bolting of

C. E. Cuming, photo.]

Each Pen has Accommodation for Two Calves.

food, which is encouraged by the usual method of allowing all the calves to fight for their share from a trough, is thoroughly bad. It induces indigestion and other disorders, and prevents the naturally slow feeder receiving its proper share. The calf that feeds rapidly is generally the worst doer, and when fed out of a common trough its bad habit is strengthened. With the separate bucket for each calf bolting is discouraged, and the slow feeder is enabled to obtain its proper share of nourishment. Under this system it is surprising to mark the rapid progress made by the slow-feeding animal. Even where the cost of special calf-feeding pens, such as those at Weraroa, cannot be afforded, some endeavour should be

made to feed each calf by itself. The good results which will undoubtedly follow should amply repay the extra time and labour necessitated.



Section of Bail, showing System of bailing up.

The calf-pens herewith illustrated have recently been constructed in the field opposite the milking-sheds at Weraroa. The plan has been generally approved by representative dairy-farmers who have inspected them. The features of the pens are that they can easily be cleaned (the concrete floor having a good fall to the outside gutter), that each calf can feed and rest undisturbed, while being bailed up for a reasonable time they do not acquire the objectionable habit of sucking one another. Each pen is large enough to accommodate two young calves, each of which has, of course, a bail to itself. Thus a large number of young calves can be housed in the spring, and more roomy accommodation be available for the older calves that require to be fed in the winter. As will be seen from the drawing, the bailing-up device is very simple.

S. B. Taylor, photo.] Common Method of feeding Calves.

SPRAY-MIXING TABLE.

J. A. Campbell.

Many spraying-compounds are recommended to be used at various strengths, such as 1 in 10, 1 in 25, 1 in 80, and so on. To mix a small quantity of spray at a given strength necessarily demands careful calculation, and the quantities required are often difficult to arrive at. Small quantities of spray are sometimes required, especially by those growers having only a few trees to spray, and also by larger orchardists when testing sprays at different strengths on a tree or two.

The following table may be of use under the above circumstances. A fluid measure with ounces marked, costing about 2s., will be necessary, and this should always form part of a sprayer's outfit.

4	fluid ounces	to 1	pint of water—	1 in 5.
4	,,	2	,,	1 in 10.
4	,,	3	,,	1 in 15.
4	,,	4	,,	1 in 20.
4	,,	5	,,	1 in 25.
4	,,	6	,,	1 in 30.
4	,,	7	,,	1 in 35.
4	,,	8	,,	1 in 40.
4	,,	9	,,	1 in 45.
4	,,	10	,,	1 in 50.
4	,,	11	,,	1 in 55.
4	,,	12	,,	1 in 60.
4	,,	13	,,	1 in 65.
4	,,	14	,,	1 in 70.
4	,,	15	,,	1 in 75.
4	,,	16	,,	1 in 80.
4	,,	17	,,	1 in 85.
4	,,	18	,,	1 in 90.
4	,,	19	,,	1 in 95.
4	,,	20	,,	1 in 100.
4	,,	21	,,	1 in 105.
4	,,	22	,,	1 in 110.
4	,,	23	,,	1 in 115.
4	,,	24	,,	1 in 120.
4	,,	25	,,	1 in 125.
4	,,	26	,,	1 in 130.

To make a larger quantity of spray at the same rate multiply the pints by a number which will give the bulk of spray required, and then multiply the ounces by the same number. For instance, supposing 6 gallons of a 1-in-60 spray is required, multiply the 12 pints (see table) by 4: this gives 48 pints, or 6 gallons. Now multiply the ounces by the same number (4): this equals 16. Therefore 16 fluid ounces to 6 gallons results in a mixture of 1 in 60.

THE PUREBRED SHEEP FLOCKS.

POSITION OF STUD FLOCKS IN NEW ZEALAND.

John Linton, Feilding.

The accompanying tables, showing the progress of the various breeders registered in the flock-books, have been copied from the latest flock-books—namely, the Romney Marsh Flock-book, Vol. ix, 1913; the North Island Flock-book, Vol. xii, 1912; the Lincoln Flock-book, Vol. ii, 1911–12; and the South Island Flock-book, Vol. ix, 1913. Although these volumes bear different dates on the title-pages, the information with regard to returns are for the same year: that is, the ewes kept for breeding and the lambs kept as rams are for 1912. Therefore these lambs appear in the tables as two-tooths.

The returns of stud sheep by the Department of Agriculture give only the total number of lambs (rams and ewes), so that the number of ram lambs on the 30th April, 1913, is arrived at by halving the number of lambs.

The most notable feature shown by the synopsis of the flock-books is the increase of the Romney; and the sheep returns show what a large number of rams are bred from ewes outside the flock-books. It will be seen that in this respect the North Island is by far the greater sinner; in fact, the South Island returns show that a very small percentage of any of the breeds are bred from unregistered ewes. Why, then, are such a large number in the class "other breeds" in the South Island table? The new breed, the Corriedale, is largely responsible. Seeing that this breed is now producing over three thousand two-tooth rams, and is now recognized as well established, the Department of Agriculture

might consider the utility of giving the breed a column in the sheep return.

In order to estimate the rams likely to be available the coming season, the figures in the tables require to be discounted for deaths, old age, and culls. Death and old age will assert themselves, and, taking last year's figures, it seems that nature was responsible for all the culling done. The year's loss being only 16 per cent.—a very low percentage for natural causes alone—the culling of inferior rams must have been very small.

It being recognized by those who have the welfare of the sheep industry at heart that a very large percentage of rams on the market are, to say the least, low grade, it were well, if it were possible, that the use of the knife were made compulsory, there being no use for at least 20 per cent. of the rams now available.

Progress of the Breeds.

A Synopsis of the New Zealand Flock-books.

Breed.	Number of Flocks.	Breeding-ewes.	Increase.	Decrease.	Two-tooth Rams.	Increase.	Decrease.
North Island.							
Romney	252	33,833	5,130	..	15,106	3,091	..
Lincoln	97	15,412	1,963	..	6,201	1,043	..
English Leicester ..	21	2,153	..	1,031	837	..	290
Border Leicester ..	14	832	..	606	402	..	233
Southdown ..	68	6,731	1,104	..	3,013	757	..
Shropshire ..	11	751	..	8	305	47	..
Ryland	3	57	31	..	13	7	..
South Devon ..	1	44	12	..	18	1	..
Totals, 1913 ..	467	59,813	8,240	1,645	25,895	4,946	513
,, 1912 ..	432	53,218	..	..	21 462	..	..
South Island.							
Romney	117	18,700	973	..	8,011	1,194	..
Lincoln	15	2,058	..	538	890	..	219
English Leicester ..	128	19,500	631	..	8,140	279	..
Border Leicester ..	172	19,707	..	6	8,760	554	..
Southdown ..	48	4,541	303	..	1,815	428	..
Shropshire ..	39	3,606	..	315	1,209	..	324
Merino	16	7,801	321	..	2,393	422	..
Ryland	6	397	44	..	168	38	..
Oxford Downs ..	1	72	15	..	5	..	5
Corriedales ..	21	8,775	..	453	3,151	..	29
Totals, 1913 ..	563	85,157	2,287	1,312	34,542	2,915	577
,, 1912 ..	562	84,182	..	..	32,204	..	..
Half-bred, 1913 ..	2	3,198	..	139	1,436	..	44
,, 1912 ..	1	3,337	..	..	1,480	..	..

A Comparative Table.

Showing the Proportion of the different Breeds registered in the Flock-books as compared with the Returns by the Department of Agriculture of Stud Sheep on the 30th April.

Breed.	Breeding-ewes.		Two-tooth Rams.		Sheep Returns.	
	Sheep Returns.	Flock-books.	Sheep Returns.	Flock-books.	Stud Rams.	Flock Rams.
North Island.						
Merino	2,970	..	778	..	172	5,385
Lincoln	27,200	15,412	10,770	6,201	1,994	33,836
Romney	61,112	33,833	25,033	15,106	4,023	101,285
Border Leicester ..	2,759	832	858	402	433	5,025
English Leicester ..	2,810	2,153	1,344	837	359	4,957
Shropshire ..	2,259	751	784	305	154	2,210
Southdown ..	7,466	6,731	2,777	3,013	737	11,310
Other breeds ..	2,739	101	603	31	120	2,510
Totals, 1913 ..	109,315	59,813	42,947	25,895	7,992	166,518
,, 1912 ..	116,079	53,218	40,979	21,462	11,186	158,741
South Island.						
Merino	17,686	7,801	3,725	2,393	1,086	13,762
Lincoln	3,452	2,058	1,319	890	213	3,013
Romney	28,648	18,700	10,272	8,011	1,115	30,646
Border Leicester ..	24,530	19,707	9,355	8,760	869	29,479
English Leicester ..	24,490	19,500	8,435	8,140	1,087	30,172
Shropshire	5,034	3,606	1,383	1,209	175	4,566
Southdown ..	5,172	4,541	2,127	1,815	301	2,172
Other breeds ..	9,861	9,244	4,236	3,324	318	20,206
Totals, 1913 ..	118,873	85,157	40,852	34,542	5,164	134,016
,, 1912 ..	116,703	84,182	36,761	32,204	4,969	131,692

It will be noticed that there is a larger number of Southdown two-tooth rams in the flock-book than in the sheep returns, which can only be accounted for by some being returned under the heading "Other breeds."

Improvement of British Live-stock.—The British Board of Agriculture has appointed as Inspectors under its l ve-stock scheme two noted Home breeders, Messrs. F. N. Webb, P.A.S.I., of Babraham, Cambridge, and C. T. A. Robertson, of Dunsford, Godalming. The former is responsible for the reputation of Mr. Adeane's flocks and herds, and is a leading judge of live-stock. The latter is a successful breeder and exhibitor of stock, and has judged at some of the leading shows of Britain. The live-stock scheme of the British Board of Agriculture was outlined in the November issue of this *Journal.*

CULTIVATING THE ORCHARD.

TRACES AND SWINGLETREE FOR ORCHARD AND NURSERY WORK.

W. C. Berridge.

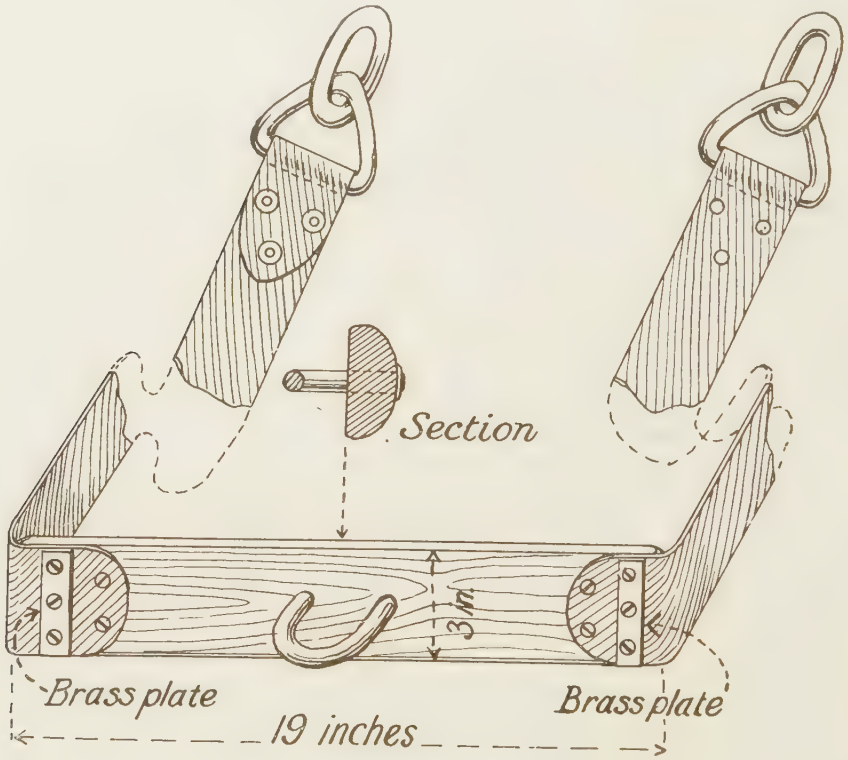
In ploughing and cultivating an orchard the trees are frequently injured and the bark damaged by the swingletrees, especially where chain traces are used. To obviate this many different kinds of swingletrees have been devised. A sketch of one of the best and simplest appears on the following page.

This has been in use for many years in ploughing and cultivating the orchard at the Tauranga Experimental Farm. It is also used between the rows of young trees in the nursery, and for cultivating between rows of maize, sorghum, or any tall-growing crops it is particularly useful. It is almost impossible to injure the bark of orchard or nursery trees if these swingletrees and traces are used, as there are no projecting or rough parts. Even if the traces are scraped roughly against the bark of the trees the smooth leather will not damage the tree. At Tauranga we have one set that has been in use for fully fifteen years, and is still in fair order. The leather is oiled occasionally when necessary, and is never left out exposed to the weather except when in use.

The swingletree should be made from a piece of hard wood, such as manuka, blue-gum, or ironbark, and the measurements should be —19 in. long, 3 in. wide, and 2½ in. thick. It was made originally 30 in. long, but has been twice reduced in length, until now we find that 19 in. is long enough for a good medium draught horse. The traces are cut from the top of a side of black heavy harness leather, the measurements being 8 ft. long and 3 in. wide. This leaves enough to rivet a triangular dee and a link on to the hames end, and to fasten on to the swingletree. It is fastened on to the swingletree with 1½ in. brass screws. A piece of brass plate 3 in. long by 1¼ in. wide is used to make it more secure and distribute the strain equally over all the screws. Iron screws rust and destroy the leather. The saddler charged 12s. 6d. for the leather and for riveting the dees into the traces, as it has to be made out of the best of the side of leather. The draught loop or staple of malle-

able iron in the centre of the swingletree can be bought ready made, or can be made by any blacksmith. The front of the swingletree is made half-round, and the ends on the flat side are rounded off to prevent the leather from making too abrupt an angle where it goes around the end of the swingletree.

Quite a number of orchardists are using these traces, and we have yet to learn of any unfavourable comments on them. They appear to be about the simplest and best in use.



Reform in the system of horticultural education in Austria is proposed by the Imperial and Royal Horticultural Association of Vienna. The first step will be the establishment of apprentice schools, of which four are already founded. Here instruction is given for nine hours weekly during the six winter months. The training may be continued in the under-gardeners' schools, which, like the apprentice schools, are only open in the six winter months. Travelling-grants given to students on leaving the apprentice schools are regarded as an important educational factor, as by this means the students are enabled to travel and work abroad.—*Bulletin of International Institute of Agriculture.*

LUCERNE VARIETY TEST.

A. Macpherson.

The Canterbury Frozen Meat Company (Limited), Belfast, Canterbury, in co-operation with the Fields Division of the Department of Agriculture, is conducting a lucerne variety test.

The land selected for the test is a clay loam on a clay subsoil, from which a crop of mangels had been taken the previous season. The area was thoroughly cultivated, and a fine seed-bed prepared, and was top-dressed with lime at the rate of 1 ton per acre. Ten varieties were drilled in on the flat in rows 14 in. apart on the 15th November, 1912, and one other variety, Marlborough, was sown on the 12th December, 1912. Seeding was at the rate of 15 lb. per acre, and no fertilizers were used. All varieties came away well. Five cuttings have been made up to the 5th February, 1914. The first cutting was left as a mulch on the ground. The total weight of the other four cuttings of each variety was as shown in the table. It should be pointed out that the leaves of lucerne are two and a half times more value as feed than the stems.

The variety which has dominated in this experiment—Dryland—comes from America, with a reputation of being most suitable for dry, arid countries. It was obtained with the object of testing it in Central Otago and the Mackenzie country. It stools out well, and has a very dense leafage. In several other cases where plots are situated on fertile soils the Dryland variety is doing remarkably well.

The details of the experiment are shown on the following page.

I have no doubt that if oats, Italian rye, or barley and tares were more extensively grown on the methods adopted with maize, sown at intervals, so that continuous feeding may be adopted, these fodders would very soon supersede maize, which entails a great deal of labour in cutting and carting out to stock.—*James Drysdale.*

The agricultural academy of Bonn-Poppelsdorf (Germany) is conducting a course in farm-management and co-operation during the present (northern) winter. It is designed to enable students to acquire a more thorough knowledge of social economy, law, and administration, and the theory of co-operation and assurance as applied to agriculture.

LUCERNE VARIETY TEST.

Plot.	Variety.	Date sown.	First Cutting: 11th February, 1913.	Second Cutting: 10th April, 1913.		Third Cutting: 4th November, 1913.		Fourth Cutting: 23rd December, 1913.		Fifth Cutting: 5th February, 1914.		Total Weight: Four Cuttings.
				Height.	Field per Acre.	Height.	Field per Acre.	Height.	Field per Acre.	Height.	Field per Acre.	Tons per Acre.
				Ft. in.	Tons.	Ft. in.	Tons.	Ft. in.	Tons.	Ft. in.	Tons.	
1	French and Arabian ..	15/11/12	Left as a mulch.	2 0	4·66	2 6	8·58	2 10	9·23	2 7	6·62	29·09
2	Arabian	,,		1 9 Cut 16 April	5·25	2 4	8·08	2 6	9·18	2 4	8·71	31·22
3	French	,,		1 9	4·66	3 4	11·98	2 8	9·85	2 8	7·51	34·00
4	Turkestan (Wellington) ..	,,		1 7½	5·05	2 10	10·09	2 6	9·72	2 6	7·58	32·44
5	Turkestan (Montgomery's)	,,		1 8	5·05	2 9	10·81	2 7	9·26	2 9	7·74	32·86
6	Hungarian	,,		1 10½	5·44	2 11	11·11	3 0	9·91	3 1	7·39	33·85
7	American	,,		2 3	4·05	3 0	9·97	2 9	9·60	2 7	6·69	30·31
8	Peruvian	,,		2 3	4·73	3 9	9·84	3 3	8·43	3 0	8·02	31·02
9	Hunter River	,,		2 3	4·40	3 0	10·09	3 1	11·45	2 10	9·72	35·66
10	Dryland	,,		2 4	5·63	2 8	9·84	2 10	11·69	2 7	10·17	37·33
11	Marlborough	12/12/12	11/3/13	2 6	7·19	2 10	9·41	3 6	11·94	2 9	8·45	36·99

QUALIFIED VETERINARY SURGEONS.

NEW ZEALAND LIST.

The following list of qualified veterinary surgeons known to be residing in New Zealand is published for the guidance of stock-owners and for general information.

In the event of the name of any properly qualified veterinarian being omitted, it is requested that he communicate with the Editor, giving particulars of his qualification, in order that the necessary steps may be taken for the inclusion of his name in the next published list.

Ashe, G. G., M.R.C.V.S., Timaru.
* Barnes, A. W., M.R.C.V.S., Hastings.
Begg, W. P., M.R.C.V.S., Ashburton.
* Blair, W. D., M.R.C.V.S., Dunedin.
* Blake, T. A., M.R.C.V.S., Wellington.
* Brodie, A. M., M.R.C.V.S., Hastings.
* Broom, G., M.R.C.V.S., Gisborne.
* Burton, S., M.R.C.V.S., Wellington.
Charlton, J. R., M.R.C.V.S., Christchurch.
* Clayton, J. G., M.R.C.V.S., Wellington.
Cockroft, J. E., M.R.C.V.S., Palmerston North.
* Collins, W. T., M.R.C.V.S., Hamilton.
Crossley, F., M.R.C.V.S., Wellington.
* Cunningham, T., M.R.C.V.S., Oamaru.
Danskin, J., M.R.C.V.S., Balclutha.
Edgar, P. M., M.R.C.V.S., Wanganui.
* Elphick, E. E., M.R.C.V.S., D.V.H., Christchurch.
Glover, F., M.R.C.V.S., Hamilton.
Hamilton, A., M.R.C.V.S., Musselburgh, Dunedin.
* Hickman, A. J., M.R.C.V.S., Auckland.
* Howard, E. C., M.R.C.V.S., Wellington.
Johnson, A. A., F.R.C.V.S., Christchurch.
* Kerrigan, J., M.R.C.V.S., Christchurch.
Lilico, T. G., M.R.C.V.S., Christchurch.
* Lyons, J., M.R.C.V.S., Auckland.
Machattie, D. H., M.R.C.V.S., Leeston, Canterbury.
Marquis, N., M.R.C.V.S., Waiuku, Auckland.
Martin, H. E., M.R.C.V.S., Gore.

* Officers of the Live-stock and Meat Division, Department of Agriculture, Industries, and Commerce.

McLeod, J., M.R.C.V.S., Christchurch.
* Meade, R. H., M.R.C.V.S., Waitara.
Miller, J., M.R.C.V.S., Invercargill.
Neale, C. R., M.R.C.V.S., Hawera.
* Paterson, A. M., M.R.C.V.S., Timaru.
* Primmer, J. H., M.R.C.V.S., Palmerston North.
Quinnell, W. C., M.R.C.V.S., Wellington.
Rait, D. H., M.R.C.V.S., Palmerston North.
* Reakes, C. J., D.V.Sc., M.R.C.V.S., Wellington.
* Reid, H. A., F.R.C.V.S., D.V.H., F.R.S.E., Wellington.
Robertson, F. C., M.R.C.V.S., Ashburton.
Robertson, F., M.R.C.V.S., Oamaru.
Siddall, E. L., M.R.C.V.S., Opotiki.
Simpson, C. S., M.R.C.V.S., Parnell, Auckland.
* Snowball, W. D., M.R.C.V.S., Dunedin.
* Spilman, D., M.R.C.V.S., Wellington.
* Stafford, J., M.R.C.V.S., Christchurch.
† Stapley, W., M.D., D.V.Sc., M.R.C.V.S., Cambridge.
Taylor, A., M.A., M.R.C.V.S., Lincoln, Canterbury.
Taylor, J. B., M.R.C.V.S., Waverley.
* Taylor, W. G., M.R.C.V.S., Ashburton.
Ward, J., M.R.C.V.S., Katikati, Bay of Plenty.
* Waugh, G. N., M.R.C.V.S., Invercargill.
* Wood, R. B., M.R.C.V.S., Auckland.
* Young, A. R., M.R.C.V.S., Wellington.
* Kyle, H. S. S., G.M.V.C. (Melbourne), Christchurch.
* Marsack, H. L., V.S. (Ontario), Auckland.
Ring, W. C., V.M.D. (Penn., U.S.A.), Ellerslie.

* Officers of the Live-stock and Meat Division, Department of Agriculture, Industries, and Commerce.
† Not now practising as a veterinary surgeon.

Inbreeding is like a two-edged sword: cuts both ways. Bad qualities are as readily transmitted as good qualities. Line-breeding is one of the most useful methods of improvement. In line-breeding, animals of the same strain but not closely related are mated, while inbreeding is the mating of closely related individuals, as sire to daughter, brother to sister, &c. If two animals are perfect in every respect there will be no danger in mating them.—*Hoard's Dairyman.*

The trend of recent research in agricultural science has brought forcibly home to us the fact that the function of fertilizers is not restricted to the duty of supplying plant-food to the growing crop. Under certain circumstances, indeed, this function is in abeyance—in the absence of sufficient water, for example, or in the presence of unfavourable soil-conditions, the action of fertilizers is almost negligible—and it is our lack of understanding of these conditions that has been the frequent cause of want of success in the use of manures.—*F. B. Guthrie, Chemist, New South Wales Department of Agriculture.*

THE HEMP INDUSTRY.

W. H. Ferris.

Declining Quality.

January phormium was of a disappointing character right throughout the Dominion. In very few cases was fibre of good quality turned out. Even in districts, such as Marlborough and Westland, where excellent fibre was milled last year the quality fell away seriously in January. The raw material was apparently just as good as formerly, and the colour was satisfactory, but the work of stripping and scutching was decidedly inferior. The leaf had been merely slipped through the machine. Indeed, the general decline in the standard of stripping in practically every district was most noticeable. Lines of fibre which had been regularly scoring a good-fair grade declined during the month to a fair and even sometimes a common grade. In a number of instances millers arrived at a fair standard with disastrous results. Working in some cases with indifferent leaf, they had it stripped to a fair standard, with the result that the combination of poor leaf, indifferent stripping, and careless scutching reduced the quality to a common grade. It is always an easy matter to strike poor quality, however high at times the ideal aimed at; but when poor quality is deliberately sought it is only to be expected that the result will be even worse than that anticipated. Millers would do well to seriously consider the ill effects of the demoralizing influence of expecting stripper-keepers to do good work one week and bad work the next. If the men are to strip any leaf well they must be encouraged to always have their machines properly set and tuned to the highest pitch. No stripper-keeper, however expert he may be, can play with his machine and depend upon securing any grade he may desire. It is only the man who always aims at stripping to the best advantage who will consistently do good work. We cannot expect an improved standard of stripping if the men are encouraged—nay, demanded—to work their machines in order to secure an indifferent result. It is a suicidal policy to aim at a low-grade product and expect to make as good a profit as for a higher grade by reason of an increased output. Rushing the various processes in the desire to secure quantity at all costs will not only lead to immediate disappointment, but will probably invite ultimate disaster. It

has to be remembered that a reputation on oversea markets is more easily lost than gained, and that the supplying of inferior goods is playing into the hands of our rivals. In other countries the common tendency is toward continued improvement in the standard of the produce exported, and it is only where this is the case that permanent trade connections on a profitable basis can be assured.

Short-sighted Tactics.

The bad practice continues of baling inferior hanks in the centre of good bales, and the forwarding of indifferent-quality bales with bales supposedly containing much higher-quality fibre. In the former case the trouble is either due to gross carelessness or to deliberate deception. In the latter case the mixing of the bales may be unintentional, but as no advice is received as to separation of the varying qualities in grading there is nothing left for the grader but to treat the parcel as one line. This mixture of qualities is becoming so common that it will be necessary, if an alteration in the methods of the responsible millers is not at once effected, to make a more thorough examination in the grading-stores; that is, more bales will have to be opened, which, of course, will add to the charges the miller has to pay Harbour Board authorities for handling his fibre at the port of shipment.

Utilization of Refuse Products.

A representative of a Boston (U.S.A.) paper-manufacturing firm has been on a visit to the Dominion inquiring into the question of obtaining supplies of the waste products of mills for papermaking purposes. He declares that stripper-slips, provided they can be supplied at a reasonable price, would make excellent material for papermaking. As there are vast quantities of this residual product now lying rotting at many mills, it is to be regretted advantage cannot be taken of this new method of utilization presented. The American firm in question is already a large user of our tow in its papermaking business.

Tow.

Though tow is realizing a fair price and there are possibilities ahead of it, millers are not taking the interest in this by-product they should. Very little first-grade is being forwarded for shipment. The bulk of the lines are loaded with dust and rubbish, materials upon which freight has to be paid (thus reducing the intrinsic value of the tow to the user) and which are, of course, useless for either the cordage-manufacturer on the paper-miller.

THE APIARY.

F. A. Jacobsen.

The variation in the seasons is responsible for a considerable amount of speculation on the part of beekeepers. One year an excellent crop may be secured without a great deal of trouble, while perhaps in the following season, through no fault of the beekeeper, no reasonable return is forthcoming. The profits, therefore, are an average over a number of years, and a nest-egg should always be kept to tide over the bad seasons.

Excellent reports are to hand for the present year from the southern part of the South Island, while probably the North Island will also have a fair share of nature's bounty in the form of honey. Up to the time of writing the climatic changes have rendered an estimate of this season's crop hazardous.

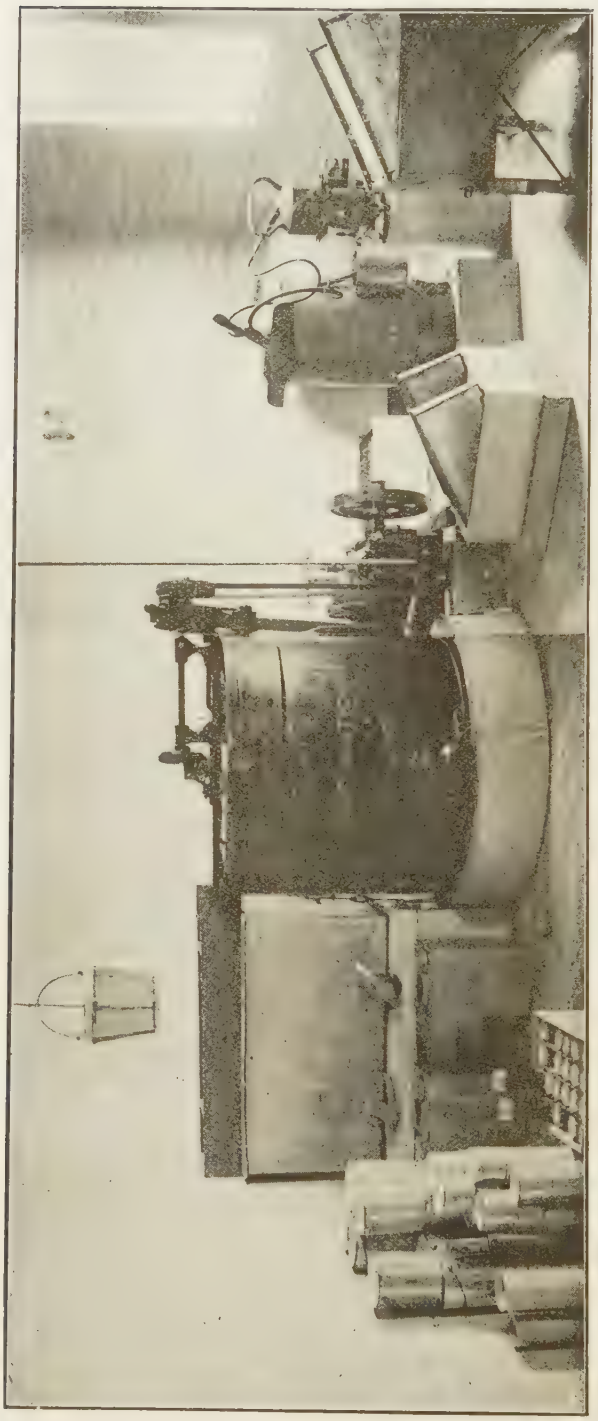
Present Work.

Extracting will now be occupying the earnest attention of all beekeepers, and care must be taken not to extract any but ripe honey. Notes on this work may be looked up in previous issues about this season of the year.

The illustration represents an extracting-house on most up-to-date principles, and it is interesting to note an improvement in the method of conveying the honey from the extractor to the tank by means of a honey-pump, a feature rarely seen in New Zealand. The pump works automatically while the extractor is in use, and has a decided advantage over any of the old systems. It is pumped through a pipe to a height of 7 ft. or 8 ft. into a bucket strainer overhanging the finer gauze. The honey is warm from the extractor during this process; hence it may be strained through a very fine gauze to eliminate pollen-grains, &c. These pumps are very popular with large beekeepers in the United States of America.

Queen Bees.

It has been demonstrated that the best time to supersede old and failing queens is in the autumn. In modern apiculture it is very necessary, however, for the beekeeper to get queens at any



The Extracting-house of R. Gibb, Southland.
Showing method of arrangement with honey-pump and power-driven extractor.

time. The success of the crop depends to a large extent on the age of the queens in the colonies, and many bee-owners requeen each year, others every two years, and others, again, allow the bees to do the work themselves. The result in the last-mentioned case is not what might be termed commercially satisfactory. The conditions under which a colony will rear a queen are (1) queenlessness, (2) swarming, and (3) supersedure. The successful beekeeper takes the reins of government himself, and for this reason it is necessary that he should have some method by which he can rear as many queens as desired. This work is sometimes left to a commercial queen-breeder, which implies that he rears queens for sale to other beekeepers, who buy from him instead of rearing their own. This plan often works successfully, and enables the honey-producer to concentrate his attention on more honey. Space forbids even a rude outline of the various methods of queen-rearing. Those desirous of becoming proficient in this branch of apiary work should study such books as "The Rearing of Queen Bees," by Dr. Phillips, and "Artificial Queen Rearing," by Swarthmore. These are both reliable works, which go into the matter in all its details. So important a matter as rearing good prolific queens for profitable honey-production should be mastered by all beekeepers, even though they buy their stock.

Beekeeping in Australia.

It is not generally known that the beekeeping flora in Australia is different from that in any other country. Here in New Zealand and in the Northern Hemisphere the principal supply of nectar comes from the fields, gardens, and roadsides; but when selecting a site in Australia the beekeeper depends almost exclusively on the eucalypts and a few other native trees and shrubs. Owing to the hot summers there the secretion of nectar in the soft herbaceous plants is suppressed, but this is not the case on irrigated lands or in exceptionally cool districts. The amount of honey, however, obtained from other than native flora is small in comparison to the amount harvested from gum-trees.

New Use for Bee-stings.—Frederick Watts, in the *British Beekeepers' Journal*, writes, "I was stung between the eyes the other day, and, as I usually wear spectacles to write or play from music, I was agreeably surprised to find I could see quite well without glasses after the sting. I may add that my nose and face swelled a little. Perhaps some oculist can explain this."

ORCHARD WORK FOR MARCH.

W. A. Boucher.

Green-manuring.

The clean cultivation of orchard lands during the spring and summer months has been strongly advocated from time to time. That the trees benefit by such treatment is beyond question. Persistent clean cultivation, however, must in time result in the soil becoming deficient in humus. This can be readily and economically renewed from time to time by the planting of a cover-crop, which in due course will be ploughed in. There are many plants which are suitable for this purpose, such as mustard, rape, lupins, and some varieties of clover. It is important, however, that a cover-crop should be planted at the right time—that is, when the soil is warm and moist, so that germination of the seed may readily take place, to be followed by the unchecked growth of the plants. If the sowing of the crop be left until late in the season when the soil has become cold, the winter weather will check the growth to such an extent that only a scanty instead of a luxurious crop will be available for ploughing under in the spring. Instances have occurred where late-planted crops appearing to be too poor to be ploughed under in the spring have been allowed to remain untouched during the spring and early summer months. The result, if the season proved to be a dry one, has been that the fruit-trees have suffered from lack of moisture due to the want of cultivation.

Not only does the ploughing-under of a cover-crop materially improve the condition of the soil, but if such a crop is rightly selected the storing-up of nitrogen from the atmosphere will considerably increase its fertility. Growers who so far have had no experience of the result of ploughing in a well-grown cover-crop will be both surprised and pleased with the vigorous and healthy growth that the trees will make during the season. The effect, while very marked during the first few months, is not confined to that season, but will be noticeable in a lesser degree during the following two or three years.

Spraying.

As the season progresses insect pests and fungus diseases usually prove less troublesome, but still the fruitgrower should not altogether

relax his vigilance. The climatic conditions in consecutive seasons are seldom alike, although recurring at intervals, so that past experience will assist growers considerably as to whether spraying operations must be continued or not.

Codlin-moth.

This pest, which requires most careful attention during the early part of the season, will in many localities have ceased to be troublesome by the end of February or early part of March, but in the warmer districts of the Dominion, if the climatic conditions prove favourable, the pest may still be in evidence. Careful watch should be kept, and, if necessary, fruiting trees should have another spraying with arsenate of lead.

Leech.

Even though late in the season, ravages by this pest should not be overlooked, for injury to the foliage will always react more or less seriously upon the health and vitality of the tree.

Packing for Export.

The handling of the main crop of apples will now be in full swing, and growers will be looking to markets outside the Dominion to absorb a surplus of the supplies available. It cannot be too strongly impressed upon exporters that the grading and packing should be of the best, and that nothing but fruit free from blemish and pest or disease of any kind should be submitted for examination for export. Nothing could be more detrimental to the building-up of a trade in outside markets than to ship fruit that is unsatisfactory to buyers. One of the most important features of the American and Canadian packs, and one well worth copying, is the extreme care that is exercised to send out even the largest lines in perfect condition in every respect.

GRAPE-CULTURE.

S. F. Anderson.

Work in the Cool Vinehouse for March.

Only the very late grapes will now be left in the houses. As these are disposed of keep the houses as open as possible, to enable the wood to mature thoroughly. So long as the weather keeps warm there is danger of red spider and thrip attacking the green shoots and leaves.

A few remarks on the cultivation of the late grapes may be of use at this time. Of these the principal ones grown in the Dominion are—Gros Colman, Lady Downes, West St. Peters, Alicante, Barbarossa, Gros Guillaume, and Pearson's Golden Queen. The commercial grower has not perhaps gone into the culture of these late varieties to the extent that the market can absorb. Where the conditions of the vinehouses are such that mealy bug and red spider can be controlled these late grapes can be profitably grown. In districts south of Christchurch, where the sun-heat is failing just as these late varieties are ripening, some artificial heat will be required to finish them off. This can be done by the help of kerosene-heaters (see page 13, Bulletin No. 40, New Series). Of these late varieties of grapes Gros Colman hangs the longest, Lady Downes the next, and the others in about the following order: Barbarossa, West St. Peters, Alicante, Gros Guillaume, and Pearson's Golden Queen. In order that late grapes may keep, decaying berries should be looked for and immediately cut out, and precautions taken against drip from the roof.

Where a grower is devoting his attention to the production of grapes under glass it is quite possible for him with very little help from artificial heat for those first ripening (Black Hamburgh) to sell ripe grapes from the 1st December to the end of May—six months of the year. To do this in the best way it is recommended to devote a house to each variety (see page 12 of Bulletin No. 40).

Where it is intended to plant vines in the coming winter the borders of the new vinery should be prepared by trenching, so that the soil may be well aerated and weathered before planting-time.

Work in the Vineyard for March.

This is the busy month in the vineyard. A few remarks on the treatment of the outdoor-grown table-grapes will be made first. Where these are being grown on the *en-chaintre* system—that is, spread over the ground and supported by forked sticks or wires—they will require attention to keep the fruit just clear of the ground. Under this system there is not the splashing of the fruit from rain, because of the leaf-protection. More forked sticks and some tying may be required. This applies more particularly to the Albany Surprise and the American varieties of grapes. The Black Hamburghs, Golden Chasselas, and others that are grown on the three- or four-wire espalier fence may have, as soon as the berries are coloured or partly so, some of the bottom leaves removed, providing it can be done without exposing the fruit too much to

the sun. The object is to allow of their drying quickly after rain or heavy dews.

Coming now to the wine-grapes: to make good wine these must be ripe. The quality and colour of the wine depend so much upon this. It means a pretty long fight with the birds before the grapes can be got in. Mr. A. A. Corban, of the Lebanon Vineyard, Henderson, uses birdlime that he has imported from Palestine. It is wonderfully effective, and with care lasts several years. For the little white-eyes that are so difficult to shoot or scare with the gun it is the best remedy I know of. It can be obtained from him, I have been informed, at a reasonable price.

In no other country, so far as I have been able to ascertain, are the grapes gathered so much before being ripe as in this Dominion. On the Continent of Europe, where the conditions are most similar to those of New Zealand, Thudicum in his work on wine says, "In the finest situations of the Rhinegan the grapes are not collected until the rains or frosts of the latest autumn necessitate the vintage." The same information has been obtained from vinegrowers coming direct from the Continent. Babo, the great Austrian authority on winemaking, says that "the bouquet of the wine from Riesling is produced by the action of frost. Wine from other grapes also possesses a like bouquet if the grapes are frozen." These authorities are not quoted with the object of persuading the winemaker in this Dominion to leave the vintage so late as this. It is to point out as forcibly as possible the necessity of obtaining to the fullest degree those peculiar virtues of the wine-grape that can be gained only by their being over rather than under ripe. Nearly all the wine made in the Dominion runs high in acid. Wine made from thoroughly ripe grapes will not have an excess of acid. The Carbenet Sauvignon, Hermitage or Shiraz Riesling, and Pinot Chardonay are varieties with tough skin and open bunches that can be left to hang as long as desirable. The Pinots Meunier, Noir, and Gris are closely clustered and do not stand the wet so well, but as they are among the first to ripen they do not always meet with the worst weather-conditions.

We know that great loss of crop is experienced from the ravages of birds—and, at times, bad weather—but, as it has been pointed out before, not greater than that met with in other countries. It is desirable at times, as the grapes come in, that they be spread out to dry, to become even slightly desiccated before being put through the stemmer and crusher. It also gives an opportunity of picking out rotten or underripened bunches, and thorough revision of what is going through for winemaking.

In the Cellar.

Where winemaking is carried on all cellar machinery must be carefully overhauled, if this work is not already done, and seen to be in perfect working-order. The walls of the fermenting-house should be whitewashed with newly slaked lime. If the floor is of earth, this should be swept to a hard surface and then well dusted with freshly slaked lime. All woodwork, such as vats, casks, stands, and benches, should be scrubbed clean. While this work—doing which requires a general shifting of things—is going on the hoops of vats and casks can be driven on and their thorough cleaning attended to.

To enable the winemaker to test the saccharine-content of his grapes, which is important as a guide when to commence the vintage, he is recommended to use the Guyot glucometre. This can be obtained from Messrs. G. W. Wilton and Co. (Limited), Auckland and Wellington. Directions for the use of this instrument are given below.

How to use the Guyot Glucometre.

This glucometre shows three scales. First, the yellow, which indicates the amount of sugar in the grape-juice or must (after it has been strained) per cent. by weight; second, the white scale, which indicates the amount of absolute alcohol per cent. by volume that will be in the wine after complete fermentation; third, the blue scale indicates the number of degrees Baumé. This scale is used by many winemakers because it gives the approximate amount of absolute alcohol by weight in the must after complete fermentation. Thus a must measuring 11° Baumé will give a wine which will contain very nearly 11° of absolute alcohol by weight.

When the grapes have attained that degree of ripeness considered fit to commence the vintage, take a few bunches, extract the juice, and pass through a fine linen or muslin cloth into the test-glass. Float the glucometre in the liquid, and note on the yellow scale the number of degrees or density. This shows the amount of sugar in weight per cent. of the must or grape-juice. We will suppose that it is 20. Then, by looking at the white scale it will be seen there should be, after a complete fermentation under favourable conditions, 13 per cent. of absolute alcohol by volume in the wine. It is best, however, owing to grape-juice containing matters besides sugar which contribute to its density, to call the alcohol 12.

As the temperature affects the density of liquids, the tests should be made when the thermometer on being put into the liquid registers 60° Fahrenheit or 15·5° Centigrade. On complete fermentation a must showing 20 on the yellow scale will be a dry wine.

To make a sweet wine from a must showing only 20 on the yellow scale an addition of the best cane-sugar must be made. The approximate amount of sugar to add to the must may be arrived at as follows: The amount of sugar already in the must is indicated as weight per cent.—that is, in the case under consideration we have 20 lb. of saccharine in 100 lb. of must, or in every 10 gallons, because a gallon of the juice weighs 10 lb. Now, to make a sweet wine the density by the yellow scale must be 35, or 35 lb. of saccharine to every 100 lb. of must, so that in this case 15 lb. of sugar must be added to every 10 gallons. As the average weight of grapes to the gallon of wine is 17 lb., if the grapes are weighed as they are brought in it is a ready method of arriving at the number of gallons of must coming into the press-house.

Note.—This is a rough method of fortifying the must, for where the proper spirit cannot be obtained the addition of sugar to the must is the only legitimate means of making a sweet wine.

In making sweet wine it is better to have it a little too sweet than not sweet enough, as it is easy to reduce it by adding a little dry wine.

When using the glucometre it should be cleaned and wiped between the tests.

THE FARM GARDEN.

W. H. Taylor.

Vegetable-culture.

At this time of the year there is very little to do in the way of planting and sowing, the work required now being mainly to coach along the growing crops. The only things that it is seasonable to sow are *spinach, silver-beet, turnips, radish,* and *lettuce.* Spinach and silver-beet are both valuable because of their immunity from the ravages of the caterpillar of the diamond-backed moth, which is so destructive to cabbages and all that tribe. The taste for spinach must often be acquired, but when this vegetable becomes appreciated it is decidedly superior to silver-beet, being, in fact, one of the most delicious vegetables. Certainly to be thoroughly appreciated it should be sent to table in its best form, and here lies the great advantage of home-grown spinach. The grower is able to thin out his plants so as to allow room enough for the strongest growth. Thus large succulent leaves are secured, which are gathered separately. When cooked they have no fibre, such as is found in poorly grown stuff. I have always found the last week in February a good time to sow spinach for the winter supply. Cooler conditions of soil and atmosphere are near enough to prevent risk of the plant's bolting off to seed, and yet far enough off for sufficient warm weather to give it a good start. It is common to grow the prickly variety for winter use, because it is hardier, and is known as "winter spinach." Gardeners of experience usually grow the round variety. Though known as "summer spinach" it is quite hardy enough for our climate, and produces larger leaves than the winter kind. Spinach requires good soil, moderately manured. Sow in drills 12 in. or 15 in. apart, and thin the plants to 9 in. or 10 in. If the soil is dry the seed requires some assistance to cause it to germinate quickly. The best way is to water the drills thoroughly after the seed is sown and before covering it with soil. It is somewhat important that the seed be got up quickly, and if the soil is very dry watering as indicated should be done. If not assisted in this way the seed would be likely to lie in the dry soil a long time before germinating. It would then be in the same position as if it had been sown later or even too late.

The soil between *cabbages, broccoli, &c.*, should be kept loose by hoeing. Indeed, it is well to hoe as often as possible, and not to wait for the soil to become close before doing so. As a matter of fact, it does not readily close up when there is no rain, and once hoed loose it may remain so for a long time. Weeds, however, appear to grow, no matter how dry it may be, and these should be checked. Keeping the top soil loose has a great effect on the growth of plants. It admits air, which is necessary, and keeps the heat of the sun from penetrating deeply. The caterpillar of the diamond-backed moth—the so-called "cabbage-fly"—is usually troublesome in dry summers, or, more correctly speaking, it is always troublesome except in very wet summers. Frequent cultivation has some effect in reducing the numbers of this pest. When disturbed the caterpillars uncoil a thread-like silk and roll down it to the ground. The plants should be brushed roughly to disturb the caterpillars, and if the soil is then drawn up to the plants many of them will be buried. In the hearts of the plants, where are the young tender leaves, there most of the caterpillars are usually to be found, and it is there they do most harm. The destruction of the young partly grown leaves stops development. Those found in this position, being well sheltered and often very young, do not leave the plant when disturbed, but coil themselves up and shelter more closely. These must be destroyed if the plants are to be saved. I may say here that unless the plants can be induced to grow there is little hope of saving them. If the soil is very dry, watering must form part of the remedial measures. Where the area planted is extensive it is useless to attempt to save the plants unless rain is fairly frequent. The caterpillars have a strong dislike to wet conditions. Arsenate of lead—1 lb. to 40 gallons of water—used as a spray will kill them, but is in itself punishing to the plants if the weather continues dry. A little helebore powder dusted into the hearts of the plants while wet with dew is also effective, and not harmful in any way. Several times I have saved my plants in this way. Tar-water is first-class as a preventive, but it will not kill the caterpillars. Moths of all kinds have a strong objection to the smell of tar, and if the plants smell strongly of it they will not lay their eggs on them. Tar-water is made by boiling ½ lb. of fresh coal-tar in about 2 gallons of water till thoroughly dissolved; then make up to 20 gallons with cold water. Do not put the tar in until the water boils. Apply copiously to the plants and soil through the rose of a watering-pot. Ammoniacal liquor from the gashouse is equally effective against the moths,

and is also a powerful fertilizer. It should be mixed with twelve to sixteen times its bulk of water.

Garlic and *shallots* have in most places finished their growth. They should be lifted as soon as that stage is reached. Do not delay the lifting, for if rain should fall they will quickly make new roots and thus be spoilt.

Onions approaching maturity should be watched. It is necessary to detach the bulbs from the ground as soon as growth is complete; otherwise second growth would follow if rain should fall. It is advisable to turn the bulbs upside down, so that the root ends do not come into contact with the soil, for that alone is sufficient to cause them to push out new roots, which results in making the bulbs soft. The tops should not be removed at the time of lifting. The bulbs should be left to dry thoroughly before being carted off, and the tops removed when placing them in store.

Tomatoes.—Even where there has been immunity from blight up to the present it is advisable to spray now with 4-4-40 Bordeaux. I have noticed that attacks of blight are very common when autumn rains come on. Presumably the sudden change to moister conditions in every way is the cause. However that may be, spraying in time is a safeguard that should not be neglected, for the result of blight at this time frequently is to destroy entirely plants laden with fruit. Remember that it is of little use to spray after the blight shows itself. To prevent its appearance is the only safe course to adopt. It often happens that people who have attended very well to the plants with respect to checking waste growth neglect them now that they have secured a crop of fruit. This should not be, for growth is apt to be very gross when rain comes, and has the effect of preventing a free circulation of air about the plants, and, by holding moisture, induces blight.

Rhubarb.—Pulling from the summer varieties should now cease. The last crop should be left to mature to form crowns for next season. It is quite common for the last crop to be used for making wine, as it is thought to be waste to leave it on the plants. This practice is quite wrong, and its effect is to destroy the spring crop. The fact that using the last crop does not kill the plants is regarded as proof that it is not harmful. The spring crop is the only one that is really valuable, coming as it does before any fruits are ready for use. If the autumn crop is pulled the plants start weakly in spring, and nothing really useful is produced until well on in the summer, when they have had time

to strengthen up. Thus its real usefulness is lost. I know of a case where every scrap of the last crop was always used for making wine. The man told me that in his locality rhubarb was never any good until March. He thought that it was the effect of the soil and climate, whereas it was, in fact, his bad practice which had reduced the crop to a mere wine-producing medium. Winter rhubarb should be kept in good growth by keeping the soil loose and, if possible, by a mulch of manure. Though termed "winter rhubarb," there is no reason why the stalks should not be used at all times, when available. Thin out the stalks for use; do not strip the plants. This class of rhubarb is very persistent in throwing up seed-stems. These should be broken off as soon as seen, except when it may be desired to save some seed. Like most crops raised from seed there is a great diversity of plants observable. Seed should be saved from the best with a view to securing a bed of a good strain. It is quite a mistake to keep the old stools too long; after two or three years they produce very poor stalks. The remedy is to raise a new lot by sowing seed in a fresh well-manured plot. They require, in fact, to be kept young, and seedlings are always more vigorous than divisions.

Lettuces.—The best varieties to sow now are the smaller kinds of the cabbage varieties. These mature quickly, and are more likely to heart than the large varieties of cabbage, lettuce, or cos varieties. Tennis-ball and All-the-Year-Round are good kinds.

Leeks may still be planted with good prospects of fair size being reached. If the plants are put in as advised in a former issue—namely, by means of a dibber thrust as far as possible into the ground—the roots will reach moist soil, and the plants will start into growth very quickly. First draw a good drill with a hoe, as for sowing peas, and put the plants along that, which will give several inches of added depth. A little superphosphate and bone-dust should be strewn along the drill before planting, so that a portion of it may be worked down to the roots when filling back the soil.

Celery should not be moulded up while dry at the roots. The moulding-up is best done at one operation when the plants are fully grown, and not a little at a time. Stronger growth can be secured by keeping the trenches open. When earthing-up is done, even if only to a small extent, it will take a large quantity of water to penetrate to the roots. Before moulding up, when the soil is dry, give a thorough watering. It is a wise precaution to apply a good sprinkling of a mixture of lime and soot before

moulding up. Scatter it well among the stems. This will clear them of slugs, wireworms, &c., which do a good deal of damage if covered in.

Small Fruit.

Loganberries having ceased to bear, the rods that have borne the fruit may be cut away so as to give all the space to the young rods, which will bear fruit next season. But this should be done only when a sufficient number of young shoots has been secured. The rods will bear fruit two seasons, but it is recognized as best to fruit them once only.

Because *strawberries* have done fruiting is no reason why the beds should be neglected. It is advisable to cultivate the ground so as to encourage the formation of good crowns, and also to assist such plants as may have been layered. These must be left on the bed till moister conditions prevail, though they may be separated from the parent plants by severing the runners. Cultivation should be done, if only to check weeds, which if allowed to remain and seed give cause for much work later on.

Gooseberry-bushes.—If these have not been sprayed it will be wise to do so where there is any sign of leaf-spot. If unchecked this disease increases with great rapidity, and when this happens, then results are disastrous to next season's crop. The remedy is the 4-4-40 mixture of Bordeaux. A good mulch of manure should be given where possible; this will have its effect on the promotion of good fruit-buds.

Black currants are esentially moisture-loving subjects. A good mulch of manure will be particularly beneficial to them.

Cape gooseberries do well in hot weather. It is not desirable to cover the soil so as to exclude the sun, but a good dressing of old manure that is little more than a black mould will be very beneficial. It keeps the surface soil loose, and promotes root-action.

Raspberry plantations should not be neglected. Weeds and suckers should be kept down by cultivation, and, if possible, the old bearing canes should be cut out. All this will tend to satisfactory development of the canes that are to bear fruit next season.

The Flower-garden.

Carnations that were layered as directed should be rooted by now if the work were done early. They must not be allowed to suffer from want of water. Being near the surface and covered with sand or light soil, they dry quickly. Those layered later will require a good deal of water. They cannot root in dry soil,

and, though they would most likely hang on and root later when the soil becomes moist, the main object would be defeated. What are required are early-rooted plants, so that they make good growth before flowering. There are many ways of rooting carnations from cuttings or "pipings" as they are termed. People with limited experience usually get into one way, and think it is the only way. The most common practice is to put the cuttings out in the open ground or in boxes in the autumn of the year. They root very well at that time, but the plants, being late, make poor growth before flowering. The fact is that they can be rooted at any time of the year if proper means are adopted. At this time the chief thing is to shade them from hot sunshine, and give plenty of water. The best place is a frame or a propagating-frame in a glasshouse. At Arataki we put in a strong batch in a frame at mid-December, many of them are now—16th January—strongly rooted.

Narcissi generally may now be planted. The early-flowering varieties that have been left in the ground are in active growth so far as the roots are concerned. This indicates that they should be in the ground. Narcissi, and, indeed, bulbs generally, are so easily grown that they are often treated in too offhand a manner. To get good-quality flowers they should be given good treatment. The soil should be well trenched and drained. Soil that is not well drained is liable to become waterlogged in winter. This causes the soil to run together, and if it is at all heavy it will become very hard in summer, and probably bake and crack—a condition not congenial to plants of any kind. Though bulbs might stand it better than most things, they should not be expected to do well under these circumstances; they would certainly do far from their best. Where the soil is naturally heavy no opportunity should be lost to add substances which would help to keep it open. Such material would include sand of any kind—road-sweepings are sometimes very good—burnt earth, wood-ashes, and vegetable matter of any kind, including stable manure. Cow manure, however, should not be used, unless it is quite two years old. At that age it is little else than black mould and is very good for the purpose, but if used before it reaches that condition it makes the soil heavy. This shows that it is very good for abnormally light soil.

Seed-sowing under glass, as previously indicated, should be continued, and may include everything of a perennial or biennial nature. Plants of other characters intended for spring flowering, including wallflowers, should have been put in earlier, as directed, and should now be fit for pricking off. This should be attended

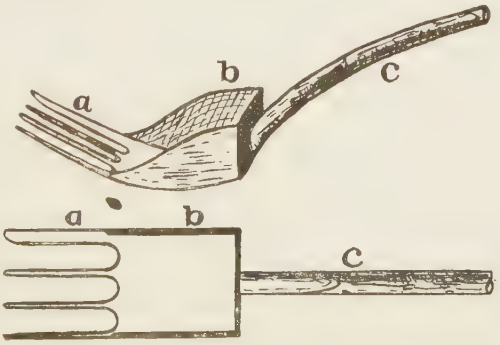
to as soon as the plants are large enough. Plants become enfeebled very quickly when they are allowed to become crowded and drawn up in the seed-boxes.

Penstemons of the improved gloxinia-flowered types are very desirable plants. Too little use is generally made of these and many other fine perennials, which, after all, are the finest features in a garden, when well grown, and a great aid in obtaining good effect with a minimum of labour. These plants are liable to become shabby unless they are renewed now and again. Now is a good time to root cuttings. Young side shoots, just as they are getting firm at the base and taken about 3 in. long, will root freely in a close frame. Precisely the same remarks are applicable to perennial phlox, and propagation may be done in the same manner.

The Japanese iris are water-loving plants, and should be given the best soil in the garden, not the driest, as I have lately seen. Their natural habitat is swampy ground, their roots being in wet soil and their heads in full exposure to the sun. They do well on the banks of a stream, where the roots can reach the water. However, they do very well in strong, well-fed soil, but must not be planted close to other strong-growing plants. They are very fine plants indeed if well grown, but are not very desirable if poorly grown.

COMBINED FORK AND SHOVEL.

The handling of litter and other short material by the fork is very difficult work. This is so with very short straw, sawdust, leaves, &c. On the other hand, the wooden shovel used for sawdust will not do for other material used to replace straw for bedding. These difficulties are done away with by using the combined fork and shovel here illustrated. This tool, which is easily made, is a four-pronged fork, with the right-hand prong (*a*) generally wider than the others. The back part is solid and forms a shovel (*b*), with a handle (*c*). The length of the prongs may be varied.—*G. De Condé, in Journal d'Agriculture pratique, and summarized by the International Institute of Agriculture.*



THE POULTRY INDUSTRY.

F. C. Brown.

A Critical Month.

March is a critical month, for upon the proper housing of the pullets, which should be the main consideration at this period, largely depend the profits to be secured during the winter months. I would repeat that short-cuts to early and heavy production are a huge mistake. It is the observance of reliable methods which tells in the end. Here it is where successful housing comes in. The pullets should be accommodated in roomy and comfortable, but fresh-air, quarters, in buildings constructed according to the dictates of common-sense. An important consideration in this connection is that the pullets should be in their laying-quarters well in advance of the commencement of the laying period. Changing the quarters of the pullet just as she has commenced to lay is the surest way of bringing on a false moult and of thus rendering a flock unprofitable. Housing is not, of course, everything. The birds must be hatched at the right time and be handled intelligently throughout the period of their development, especially in the matter of giving them a good range and feeding them on a plain but generous ration, and never varying food or management. Of course, pullets will sometimes moult in spite of every precaution, and this emphasizes the importance of taking every care to guard against it. Try no experiments, and remember that the pullet has been bred out of its natural season, and is expected to produce its maximum yield of eggs at a time when nature has decreed that it should rest. It is obvious that no risks can be taken under the circumstances, but rather that the pullet should be given every possible encouragement to respond to the unnatural demand being made upon her.

The time is opportune to reiterate the advice that too much care cannot be taken in feeding the winter layer. The whole object of feeding during the period from incubation to commencement of the laying period should be to develop the bird's body and build up her constitution, in order that she may be able to stand the heavy drain on her system entailed by the laying of an artificial egg-yield; but when she has indicated her desire to

commence laying, the diet should be directed to supplying the elements which go to constitute the eggs she almost daily produces as well as providing for her bodily wants. This may suppose an understanding of a ration of a really scientific character; but we may be well content in the knowledge that the supplying of a certain amount of nitrogenous material, combined with the necessary ingredients to maintain the animal in good health, is all that is required; and we have sufficient evidence in the egg-laying competitions of this country to prove that the ration there adopted is quite sufficient for the purpose of ensuring heavy egg-production without affecting the bird's health. I quite agree that something might be done in the direction of securing foods which can be produced at a cheaper rate than those commonly employed; something to replace, if only partly, wheat, pollard, and meat. In this connection I cannot recommend too strongly the growing of a patch of lucerne, a highly nitrogenous plant which will grow in almost any situation provided a good preparation of the soil is made for the crop. Lucerne hay, chaffed and steamed overnight to mix with the morning mash, should prove most effective for egg-production and be decidedly economical. As a green food for poultry there is nothing to equal it. With a quarter-acre patch of this the poultryman would have at command ideal green food throughout the year, except for one or two months in midwinter.

I was always an advocate—especially where there was considerable variation in the egg-yielding power of members of a flock—of feeding the nitrogenous material, such as meat, separately, say at midday, so that the bird could balance its own ration; and I have seen nothing yet to make me alter this opinion. It may be argued that the mixing of the nitrogenous material with the mash has given excellent results in the egg-laying competitions, but it has to be remembered that the birds in the competitions are all of a fairly high egg-laying standard, and consequently demand about an equal ratio of the special egg-food. With the great majority of flocks, however, the case is different, even where these are all composed of such a breed as White Leghorns, and these all young stock. I realize that it is not always feasible to cook meat and feed it separately. Here I would recommend that a certain amount of the substitute be provided in a receptacle, so that those birds whose nature craves for a larger share may be able to secure it.

Quality of Product.

There is a growing tendency towards confining the layer in roomy open-fronted houses. Now, I thoroughly believe that in

cold wet weather the heavy egg-producer should have all her energy conserved by not being exposed to wet yards or to inclement weather, but I would only advocate this confinement when bad weather necessitated it. If the layer is to be maintained in its best vigour, and lay large eggs with good-coloured yolks, it should have the range of a good yard affording some semblance to the conditions her nature demands. I have seen nondescript hens laying in good numbers large, fine-flavoured eggs—eggs that would command attention in any market; but the birds had ample range, and were consequently in the pink of condition, and were thus able to lay to the very best advantage. When I sampled these eggs as a breakfast delicacy I immediately recalled the small, sickly, pale-yolked eggs I have had placed before me in restaurants, obviously laid by fowls which were confined in a small back yard, and which never knew what it was to taste green food. The whole tendency of the world is towards an improved standard of living, and the day is not far distant when consumers will refuse to pay the highest market value for an inferior product. Just as purchase by weight is bound to come, so will quality enter into the market value of eggs. It is then that the brand of a man who pays attention to these details will be of some value. It is well to remember that the food and treatment which will enable a bird to produce to the best advantage will also be for the benefit of the bird's health and consequent freedom from disease.

Culling.

The word "culling" should be pasted in every poultryman's hat at the present time. This is a period when the second-year birds are having their final flutter. Therefore there is no better time to choose the breeders and discard the drones. It is a good rule to eliminate the early moulters, and this point cannot be emphasized too much. What chance has the early-moulting pen in a laying competition? It is an easy matter to sort out the money-makers from the boarders. Handle the first moulters, and they will be found as heavy as lead. They have been converting their food into flesh, that is if they are not light through having a weak constitution. Catch the late moulter, however, and she will be found to have no superfluous flesh on her. When it is considered that the second-season bird will be resting for four or five months before commencing to lay again, it will be seen that the discarding of the drones, invariably the early moulters, is imperative to secure profitable results.

Leg-weakness.

Many inquiries have been received lately in regard to leg-weakness—generally with half-grown stock. Almost invariably the trouble occurs where the quarters are confined and ill-ventilated. The cause is a very simple one. The artificial treatment from the brooding stage has been overdone. Instead of being gradually hardened off and given exercise, the bird is confined and develops like a hothouse plant. There is really no cure when the birds become badly affected, and the use of the axe is the most satisfactory treatment. This is one of those many instances in connection with poultry-keeping where prevention is the only way of fighting the trouble. Comfortable and fresh-air housing, ample exercise, and a plain diet are the best means of warding off the complaint. Leg-weakness is one of the several indications that the vital essential in breeding poultry—maintenance of constitution—is not considered as it should be. I have seen birds from stock of undoubted constitution develop into weedy specimens of their breed, solely because of improper management in the development stage. No good layer has ever been secured in the absence of any precaution to ensure vigorous development. Coddling, overcrowding, ill-ventilated quarters, insufficient exercise, and high feeding are prolific causes of leg-weakness and kindred troubles.

Information desired.

I am continually receiving letters asking for advice on the treatment of stock affected with certain troubles arising generally out of improper management, but seldom do the writers supply the information necessary for me to understand the cause, much less to suggest a remedy. Inquirers cannot be too explicit in describing any trouble they desire advice upon, while complete details of the symptoms observed and the general conditions under which the birds have been kept would prove most useful.

Things to Remember.

Hens that are kept hungry will never be profitable.

The loss from broken eggs in transit is enormous, and is due chiefly to careless packing and rough handling.

Eggs marketed in a dirty state indicate a careless producer, and often mean lower prices.

Line-breeding is necessary to intensify desirable characters. The hen must be of laying-blood, have a good table carcase, and be capable of hatching chicks to be a first-class farmer's fowl.

ANSWERS TO CORRESPONDENTS.

CORRESPONDENTS are requested, when desiring information through the Journal in regard to disease in animals and plants, to forward, where possible, affected specimens, in order to facilitate a correct diagnosis of the trouble and to ensure the best advice. In stating a question the most complete descriptive details should be furnished.

Correspondents desiring information in regard to manurial treatment of soil are requested to fill in and forward the prescribed form—"Application for Advice as to Manurial Treatment of Soil"—obtainable from any office of the Department in the Dominion.

In every instance a question to which an answer is desired in these columns must be accompanied by the full name of the inquirer, not necessarily for publication, but as a guarantee of good faith.

Rotation of Crops.—Lucerne

Mr. George Emtage, Moturoa Island :—

1. I have a piece of good land close to the cow-shed which I should like to keep for cultivating for the cows. The crops to be grown are mangels, turnips, oats, oats and vetches, maize for green feed, also Japanese millet. Do you think it possible to keep up the fertility of the ground by rotation, green-mauring, and manuring every crop artificially? If so, how would you rotate them?

2. What is the best top-dressing for lucerne on pure sand?

The Fields and Experimental Farms Division :—

1. It is assumed that it is the intention to grow the crops mentioned continuously from year to year. It would undoubtedly be possible to keep up the fertility by this system, provided that the right fertilizer is used for each crop and the practice of providing humus by green-manuring is continued. If it is the intention to fertilize each crop separately the practice of a rotation would be a secondary consideration. Apart from that, the following would appear to be a good rotation: mangels, oats and vetches, maize, oats, turnips, Japanese millet. The crop embodying the legume would be best to turn under as green manure, or a catch-crop of crimson clover could be grown immediately after the oat crop is taken off and this ploughed in.

2. Granted that you have obtained a catch of lucerne on pure sand, the top-dressing to use would be one containing phosphoric acid and potash, the plant obtaining nitrogen from the air. Basic slag, applied at the rate of 3 cwt. per acre, and sulphate of potash at about 1½ cwt. per acre, should meet the requirements of the crop. Should you not obtain a satisfactory catch of lucerne, plough it in to give humus to the soil, and sow again the following season.

Steel Silos.—Kerry Cows.—Bound Journals.

Mr. W. H. Phair, Shakespeare Street, Greymouth :—

1. In the July issue of the *Journal* there appeared a description of steel silos in which it was stated that Mr. Moynihan, of Shannon, was importing one, and that full details as to cost and construction when erected would appear in the *Journal*. As I have not noticed any details so far, could you favour me with any information as to whether they have been a commercial success, or otherwise?

2. Kerry cows: Could you favour me with the approximate cost of these little cows landed in New Zealand, and if they are likely to be of any success for dairy-farming—*i.e.*, butter-fat?

3. *Re* bound volumes: Does price quoted (4s. 6d.) include freshly bound numbers?

The Fields and Experimental Farms Division :—

1. *Re* steel silos: Owing to unforeseen circumstances Mr. Moynihan has not yet received his silo, but it is expected this month. Further information will be published in the *Journal*.

2. Kerry cattle landed in the Dominion would cost approximately £50 to £75 per head. It would not be advisable to build up a herd of these cattle with a view to obtaining a successful dairy herd. These animals are successful on hilly country and small holdings.

3. Yes.

Chou Moellier.

Mr. H. B. Airey, Post-office, Waikino :—

Please inform me at what season I can plant chou moellier. Can it be planted now? If so, until how late in the fall would it be safe to plant? Can it be broadcast? If so, what quantity of seed and what manure should be used?

The Fields and Experimental Farms Division :—

If sown at once it may succeed, but it is best sown about September. It can be broadcast, but gives the best results if drilled, and if fed off there is less waste in drills. Use about 4 lb. of seed to the acre if drilled, and double that if broadcast. It transplants well. Manure with 2½ cwt. of basic slag, 2 cwt. bonedust, and 50 lb. sulphate of potash per acre.

Lupins.

"Inquirer," Poverty Bay :—

I have about 40 acres of river-flat of a sandy nature. I wish to grow a crop of lupins (yellow) to plough in to form humus to plant lucerne afterwards. Could you inform me where I could procure the seed, and how much to sow to the acre?

The Fields and Experimental Farms Division :—

Any firm of seedsmen would procure the seeds. Sow 2 bushels per acre if broadcast—80 lb. if drilled. Drilling is preferable to broadcast. Plant to a depth of 2½ in.

Pasture.

"Bushman," Waiau, Tuatapere :—

1. What is the best mixture to surface-sow on a bush burn? The pasture will be for either cattle or sheep. The surface is a deep loam, and is chocolate in colour. Ordinary red clover and cow-grass do not last long here on surface-sown land. Is there any kind of red clover which lasts well?

2. Should a little lucerne be included in the mixture?

3. Although good seed may be used here, Yorkshire fog will spread over the ground in the course of time. Is there any reasonable way to prevent this? I grow plenty of cocksfoot for seed.

Cocksfoot and white clover are always increasing on a surface-sown clearing. On some land about here, exactly the same as mine, timothy has done well as a permanent grass. Perennial rye-grass is good for the first four years at least. I do not know how long it lasts. Red clover and cow-grass soon give out where the pasture is eaten by stock, but not in paddocks reserved for hay. Common trefoil grows well in pasture here, where the ground is fairly damp. It may grow well on dry ground for all I know. It is not usually sown here, but sometimes its seed may be present among alsike or clover seed.

4. Is it better to sow light perennial rye-grass seed or heavy?

The Fields and Experimental Farms Division :—

For the class of land described the following mixture should prove suitable: Rye, 8 lb.; cocksfoot, 10 lb.; meadow foxtail, 5 lb.; timothy, 5 lb.; white clover,

2 lb.; alsike, 1 lb.; meadow fescue, 3 lb.; crested dogstail, 3 lb.; *Danthonia pilosa*, 2 lb.; *Lotus major*, 1 lb.; total, 40 lb. per acre.

Surface-sowing is always uncertain, mainly because a certain proportion of the seed may not reach the soil; hence the necessity for a heavy seeding. Many farmers, however, do not sow more than 24 lb. per acre. True cow-grass is permanent on cattle-country, but on sheep-country no type of red clover persists more than three or four years.

2. The inclusion of lucerne in the mixture is not recommended.

3. There is no reasonable way of preventing Yorkshire fog from spreading, especially in a damp climate like Southland.

4. It is always advisable to use heavy seed, machine-dressed

Agricultural Publications.—Eradication of Blackberries.

Mr. C. R. Taylor, Waipawa:

As I am anticipating taking up farming and have not had much practical experience, I shall be much obliged if you could inform me whether there are any books written on general farming; and, if so, what one you think would be most suitable for me to get. Could you give me any idea of the price of same?

I shall be glad also if you can inform me of the best method of eradicating blackberries. I wish to clear some off the property, and would like to know the best means to employ.

The Fields and Experimental Farms Division:

A suitable book for a person taking up farming is "Fream's Elements of Agriculture." This publication costs about 7s. 6d. and may be obtained of almost any bookseller. Another good book is "The First Book of Farming," by Charles L. Goodrick. This would cost about 5s. to 7s. 6d.

There is only one practical method of eradicating blackberries, and that is by grubbing.

Californian Thistle.

Mr. Edgar S. Clarke, Clarewood, Dunedin:

Some eight years ago we felled about an acre of bush and sowed grass, and when the season came round we had a fine crop of Californian thistle, which we cut down for about five years. Then they began to get thinner, and each year since there have been fewer thistles, and this year I do not see any. The land has been grazed each year. Can you please offer any explanation, and will it guide us as to what we can do to clear other land of the same pest?

The Acting Director of the Fields and Experimental Farms Division:—

This seems a good indication that annual cutting properly carried out is efficacious in clearing Californian thistle. I should say that the land is light. On such soil cutting certainly quickly weakens the thistle. On heavy land the weed recovers so rapidly after cutting that little weakening of the plant appears to take place.

Fruit-tree Pruning.

"Campus," Camp Hill, Otaki Railway:

I have some plum-trees, planted in 1909, which have made 5 ft. to 7 ft. of new wood each season, but have been strongly pruned back each winter to about 10 in. to 15 in. This last winter they were not pruned at all in an attempt to check their growth, but they have now some 8 ft. of wood for the two years. How am I to prune them next winter? Some peach trees, also planted in 1909, were making 7 ft. to 8 ft. of wood, but were pruned down hard each winter up to last

winter, when I left each alternate branch and pruned each alternate branch back to about 18 in. These unpruned branches, now 7 ft. to 9 ft. in length, have borne fruit this summer. How should they be pruned next winter?

The Orchards, Gardens, and Apiaries Division :—

It would appear that your fruit-trees are making too much wood, and require root-pruning. The Orchard Instructor for your district has been asked to call and inspect the trees and advise proper treatment.

OATS.

MESSRS. PREEST BROS., Orini, Taupiri :—

1. What kind of oats do you recommend for autumn sowing for green feed for cows in spring?

2. How much per acre would you sow?

The Fields and Experimental Farms Division :—

1. We would recommend Garton oats. This is a strong grower, and gives a large amount of grazing.

2. In your district, and for the purpose required, we would recommend a heavy seeding of 3 to 3½ bushels per acre. It might be preferable to sow a mixture of, say, 2 to 3 bushels per acre of these oats with 1 bushel of Black Scotch tares.

SILAGE.

"BERKSHIRE," Opotiki :—

Will well-made silage in silo keep for an indefinite period?

The Fields and Experimental Farms Division :—

Well-made silage will keep in good order and condition in an airtight silo for over five years, but it is not recommended to hold silage over a period of two years. It is best to have two medium-sized silos, so that one may be at all times kept full, and the other empty in readiness to receive any catch-crop that may be going to waste on the farms. This will be found more economical than having one large silo. Stack ensilage has been known to keep good for five years.

RHUBARB AND PARSNIP WINES.

"WAITOA," Thames Valley, Auckland :—

Would you kindly give me receipts for making parsnip wine and rhubarb wine?

The Orchards, Gardens, and Apiaries Division :—

Rhubarb Wine.—Crush the stalks by passing them through an ordinary washing-wringer. To every 6 lb. of the stalks used add 1 gallon of clear soft water. Leave the whole, including crushed stems, to infuse for a night. Then strain off from the thick, and to every gallon of the liquid add not less than 4 lb. of the best sugar.

Ferment in a cask of suitable size—that is, one that will hold rather more than the quantity to be fermented. As the fermentation is going on it will froth over. This must be wiped away from time to time and the outside of the cask washed, otherwise it may go sour, communicate acetic fermentation to the wine, and turn it to vinegar. As soon as it is quite still it should be racked off into a clean cask and left to clear. A small bag of clean-washed sand should be kept over the bung-hole until all fermentation has ceased. Then bung tightly. After standing for at least six months it may be bottled.

Parsnip Wine.—To every 4 lb. of sliced or grated parsnips add 1 gallon of boiling water. When cold, press out the liquor and add 4 lb. of the best sugar

and ½ oz. of cream of tartar to every gallon. The wine is then made as advised for the rhubarb.

It is necessary that all vessels used must be very clean and the juices not come in contact with iron buckets, &c.

Baling Hay.

Mr. F. C. Powell, Albany, Auckland :—

Would it be feasible to take mixed grass and clover hay straight from the cocks and bale it under pressure without intermediate curing in the stack? If so, can you mention a suitable press? I presume it would be desirable to stack the bales under cover to cure. Of course, it would be understood that the hay was saved in good condition and dry.

The Fields and Experimental Farms Division :—

It is quite feasible to bale hay straight from cocks, providing there is not an abnormal amount of clover in the mixture. In parts of Canada hundreds of tons are prepared for shipment by this method. As the climate in the Albany district is very good there should not be any trouble in regard to curing. The bales should be stacked in such a manner that a current of air passes between them. The ordinary press used for baling straw is suitable.

Manuring Swede Turnips.

Mr. W. J. Kissel, Motupipi :—

Would superphosphate kill swede-turnip seed? I sowed No. 1 plot of swede turnips with basic slag, No. 2 plot with superphosphate, No. 3 plot with the two mixed. No. 1 is a very good strike of turnips; No. 2 is a complete failure, not a plant coming up; No. 3 is the best of any. Was the superphosphate the cause of the failure of the turnips?

The Agricultural Chemist :—

Probably too much superphosphate was sown in contact with the seed. The correspondent is referred to my article on "Artificial Fertilizers: Their Misuse," in the *Journal* for December, 1911.

Cow sucking Herself.

"Manaia," Taranaki :—

What is the best method to stop a cow from sucking herself? I have tried several fixings supposed to be preventives, but so far I have not found the right one.

The Live-stock and Meat Division :—

We would advise you to dry her off, and fatten her, if she will make beef.

Planting Cherry-trees.

"Inquirer," East Oxford :—

I intend to plant some cherry-trees this coming season, and as I will be covering them with wire netting I should like to ask the closest distance apart I could plant them, consistent with fair treatment of them. I would also like to know the best manure for cherries.

The Orchards, Gardens, and Apiaries Division :—

The cherry-trees should not be planted closer than 20 ft. apart on the square. This will allow sufficient room between the trees when full grown. The manuring of the cherry-trees is largely dependent upon the nature of the soil. Well-rotted

stable manure applied over the feeding-roots is very suitable if procurable. A good general fertilizer is sulphate of potash, bonedust, and superphosphate in the proportion of 3, 2, and 1. It should be applied early in the spring over the roots and lightly forked in.

Fruit dropping from the Trees.

Mr. B. Morrall, Fendalton :—

I have an apricot-tree that promised well by the bloom. I took every care that the frost would not get at it, but now I observe that a lot of the fruit is dropping off. I have also a cherry-tree that escaped the frost: the fruit formed, but now I see most of the cherries are on the ground. There is only one cherry left on each bunch. Please inform me of the cause, and how to cure it.

The Director of the Orchards, Gardens, and Apiaries Division :—

Without specimens it is a rather difficult matter to say what is attacking your fruit-trees. I would advise you to communicate with the Orchard Instructor, care of Department of Agriculture, Christchurch, who will be pleased to inspect the trees and advise treatment.

Grape-leaf Scalding.

Mr. R. J. Ward, Awahuri Road, Feilding :—

Would you inform me what is the cause of the spot on the enclosed grape-leaf? Several leaves through the house are tainted in the same way. The vine is over 12 in. from the glass.

The Orchards, Gardens, and Apiaries Division :—

The grape-leaf was examined, but no disease was found present. It would appear that the leaf has been scalded through improper ventilation. Delay in opening the ventilators in the mornings when a hot sun is shining on the moisture-laden leaves is the chief cause of scalding.

Sample of Grass.

"Farmer," Hyde, Central Otago :—

I am forwarding a sample of grass. Can you tell me through your *Journal* the name, and whether it is a suitable grass to grow in a wet or a dry climate?

The Biologist :—

The grass sent in *Danthonia pilosa*. This is one of our most valuable native grasses, and is specially suited for poor, dry sheep-country. On much of the third-class land of New Zealand danthonia is one of the best grasses to employ. There are indications that the price of the seed will this season be low in comparison with that of past year.

Snail.

"Slug," Brook'lyn :—

I have this day forwarded to you a slug—a snail captured in the garden. Would you kindly let me know particulars about it? There have been several caught about here lately, but they are not common.

The Biologist :—

The specimen sent is one of the carnivorous slugs. These animals are useful in a garden, as they help to get rid of any herbivorous slugs and snails that may be present. The decaying condition of the specimen precluded specific identification.

Weed for Identification.

"Anxious," Bellsfield, Inglewood :–

Can you tell me what the enclosed weed is, and how to deal with it? On my land there is a small patch, seen for the first time this year.

The Biologist :-

The specimen sent is Californian thistle (*Cnicus arvensis*). The patch should be carefully cut down just below the level of the ground whenever any sign of any growth appears. If the patch is quite a small one, heavy salting at the rate of 3 tons per acre should be effective.

Diseases of Apple and Plum Trees.

"Inquirer," Pahiatua :—

I am sending two apples and a few leaves off two trees that are infected with some disease. I do not know what it is, but they had it slightly last season and are much worse this year. The trees are about nine years old, and have borne well up till now. But now the apples are, as you will see, very small and withered.

I also have three plum-trees. They are the same age as the apples, but have never had fruit on them yet. Would it be advisable to cut them off and bud them again? If so, what would be the right season in which to do so? Will you let me know the kind of spray to use, and the time to use it, on apples?

The Orchards, Gardens, and Apiaries Division :—

The apple specimens forwarded are badly attacked by a fungus disease known as apple-scab (*Fusicladium dendriticum*). In order to control this disease the trees should be sprayed in the early spring when the buds are beginning to swell with the 10-10-40 formula of the Bordeaux mixture, and again when the fruit has formed with the 4-5-50 formula of the same spray. Spray at intervals of about fourteen days with the weaker formula if it is necessary. Directions for making Bordeaux mixture are given on spray leaflet issued by the Department, which may be obtained free on application.

You give no particulars whatever about your plums. It is very difficult to suggest the cause of unfruitfulness without some information. Can you tell me anything about them—*i.e.*, what variety are they, and what sort of ground they are on? Does the foliage seem healthy? Perhaps you can post a small branch to the following address: Director of Orchards, &c., Department of Agriculture, Wellington.

Planting Olearia.

"Umakoura," Manganui :—

What is the best time to set cuttings of olearia? In the winter I planted a lot to form a hedge around my garden. Only a few grew, so I concluded that it was the wrong time to plant them.

The Orchards, Gardens, and Apiaries Division :—

Cuttings from 12 in. to 15 in. long should be taken off the parent plants about March, and planted closely in moist sandy soil partially shaded from the midday sun. The general rule in planting all cuttings is to put them two-thirds into the ground and one-third out. Firm tramping and sharp sand at the base of the cuttings also tend to induce root-formation.

THE WEATHER FOR JANUARY.

D. C. Bates.

Atmospheric pressure remained high in the northern districts from the beginning until the 27th of the month, although during this period several depressions of but slight intensity passed in the south—viz., on the 3rd, 9th, 11th, 13th, 16th, and 22nd. On the latter date some heavy downpours occurred, especially in the western districts.

The most unsettled period, however, was from the 27th to the end of the month, when an intense and extensive depression of a cyclonic type enveloped the Dominion. General rains ensued, and these were extremely beneficial to portions of the North Island where dry conditions had been experienced for some time.

As a whole the month was one of fine and warm weather. Nearly the whole of the North Island and also the north-eastern portion of the south recorded considerably less than the normal rainfall, but the remaining portion of the South Island had an excess.

DISTRICT NOTES.

Chiefly from Telegraphic Reports.

District.

1, 2, 3. In all these districts the weather during January proved warm and dry, the total rainfall averaging about 60 per cent. below the normal. The last three days were the most unsettled, and what little rain there was fell mostly at this time, although a few stations recorded heavy rain on the night of the 22nd.

4. Heavy rain fell on the 22nd, various observers measuring over 1 in. for the twenty-four hours. At Purangi on this date 3·02 in. fell, at Okoke 3·92 in., and at Riversdale, Inglewood 2·51 in. The weather on the whole was generally fine and warm, with dry westerly winds prevailing. The aggregate month's fall was about 20 per cent. lower than the average.

5, 6. About 70 per cent. below the average rain fell during the month, fine and warm weather predominating with but slight wind-movement. The rainy condition towards the close of the month was generally appreciated, especially by the farming community.

7, 8. Generally hot and dry weather was experienced, no rain falling until the 29th, on which day strong northerly winds prevailed. Unsettled conditions prevailed on the last three days of the month. The aggregate rainfall was everywhere considerably lower than the mean, in many cases not half an inch being recorded.

9, 10. Rainfall was slightly below the average, but a few stations in district No. 9 recorded a slight excess, Wanganui having 25 per cent. above. Rain occurred on only a few days during the month, particularly the 22nd, 29th, 30th, and 31st. The remainder of the month was generally fine.

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Thames
Hamilton
Raglan
Kawhia
Tauranga
East Cape
Cambridge
Rotorua
Taupo
Gisborne
New Plymouth
Cape Egmont
Napier
Pateo
Wanganui
Palmerston N.
Foxton
Castlepoint
Farewell Spit
Nelson
Blenheim
Wellington
Cape Foulwind
Westport
Cape Campbell
Kaikoura
Greymouth
Hokitika
Bealey
Country
Christchurch
Lyttelton
Ashburton
Oamaru
Timaru
Mackenzie
Queenstown
Clyde
Dunedin
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NZ MEAN TIME

District.

11, 12, 13. In the extreme north of district No. 11 there were only a few days with rain, the total being somewhat below normal; but excessive precipitation was recorded elsewhere, the difference above the mean increasing southwards. Westport recorded 11 per cent., Hokitika 40 per cent., and Okuru 175 per cent. above. Westerly winds prevailed, causing a preponderance of dull weather, but most of the rainfall occurred during the night.

14, 18. With the exception of a few isolated stations the rainfall was below normal by about from 20 to 60 per cent. The most unsettled portion of the month was on the last three days, and on the 30th severe electrical disturbances were experienced in parts. Fine weather predominated, with occasional very hot days.

15. On account of several days of heavy rainfall the total for the month reached about 25 per cent. above the average. The maximum falls occurred on the 5th, 22nd, and 29th. Strong north-westerly winds were frequent, but a fair amount of fine weather prevailed.

16. About 50 per cent. above the average rainfall was recorded. Over 1 in. was measured at several stations on both the 22nd and 31st. Strong and squally winds and unsettled conditions prevailed on numerous days, interspersed with several periods of fine weather.

17. From the 5th until the 16th unsettled weather prevailed, and during this period most of the rainfall was recorded, the aggregate being about 40 per cent. above the mean of January. The remainder of the month was generally fair to cloudy.

19. Rainfall was generally below the average, except in the southern parts of this district, where the total was slightly above. Fine and hot weather was the predominating feature of the month.

20, 24. The total rainfall ranged from about the average to 20 per cent. above in these districts. Fine and hot weather was generally experienced, but there were several days on which moderately heavy rain fell, and occasionally electrical disturbances occurred.

25. The difference from the mean rainfall varied considerably in this district, an excess usually being recorded, but at some stations there was as much as 50 per cent. below normal. Much dull and showery weather prevailed.

Although there has been no lack of feed at the Ruakura Farm of Instruction, the pastures are dry, and chou moellier is now being fed to the dairy cows. Generally speaking, all the stock is in good condition, and the sheep at present on the farm total 2,300. During the past three months the experimental sheep plots have carried fifteen sheep per acre, and the grass has now been eaten down.

Having read in the *Journal* of the active part played by some of the district high schools of the Dominion in the co-operative field experimental work, Mr. J. B. Spencer, Editor and Chief of the Publication Branch of the Canadian Department of Agriculture, has written to Mr. A. Macpherson, Fields Instructor, Christchurch, for rules and regulations governing the work done in connection with the secondary schools of the South Island.

THE FRUIT CROP.

The officers of the Orchards, Gardens, and Apiaries Division report as follows on the condition of the fruit crop at the end of January:—

Whangarei.—Apples: Medium to good. Lemons: Fair. Nectarines: Heavy. Peaches: Mid-season—light; late—heavy. Pears: Early varieties, light; late, heavy. Plums: Fair to good. Plums (Japanese): Finished. Strawberries: Finished. Tomatoes: Very fair crops where spraying has been indulged in. Oranges: Poor-man—medium; Sweet—poor. The month has been dry on the whole, and, besides being very favourable to the carrying-out of spraying operations for the combating of codlin-moth, has materially assisted those orchardists who have had to combat the fungoid diseases, especially the apple-spot, pear-scab, and powdery mildew, which, it is gratifying to note, are now very little in evidence where the proper measures have been adopted for their eradication. The Irish blight has been troublesome in many parts of the district on both potatoes and tomatoes, and in cases where spraying with Bordeaux has been neglected entire crops were lost. Rain would be welcome now.—*J. W. Collard.*

Auckland North.—Apples: Crop well up to promise. Lemons: Very scarce; trees looking well. Nectarines: Crop practically over. Peaches: Heavy supply; prices low. Pears: Good average crop; unfortunately scab rather prevalent owing to adverse climatic conditions during November and December. Plums: In fair supply. Plums (Japanese): Crops finished. Tomatoes: In average supply.—*W. C. Thompson.*

Auckland South.—Apples: Looking well; prospects good. Apricots: Practically all finished; good prices maintained throughout season. Lemons: Crop good. Nectarines: Heavy pickings; sample good. Pears: Few Williams's being sent to market; quality and crop good. Plums (English): Far better crop than for years past. Plums (Japanese): Crops patchy; better than anticipated; crop about average. Strawberries: Practically all finished; berries small. Tomatoes: Crop excellent; fairly free from blight in Thames district. This month has been exceedingly dry and warm, and a good rain would now be of great benefit to all fruit.—*N. R. Pierce.*

Hamilton.—Apples: Crops looking very fair; early varieties ripening well; late varieties very promising; moth very numerous where spraying has been neglected. Apricots: Practically all harvested. Cherries: Gathered. Lemons: Very scarce at present; coming crop promises fair. Nectarines: Plentiful; ripening excellently. Peaches: Looking very fair; all varieties are ripening very satisfactorily; prices rather low. Pears: Crops fair; ripening freely. Plums: Rather scarce. Plums (Japanese): Crops light; realizing better prices than usual. Tomatoes: Crops looking fair; traces of blight showing. Walnuts: Crops ordinary; blight showing in nearly all crops.—*T. E. Rodda.*

Poverty Bay.—Apples: Good average. Lemons: Better promise than last season. Nectarines: Very fair. Peaches: Variable; medium to poor. Pears: Fair. Plums (English): Crop nearly over. Plums (Japanese): Crops nearly over. Tomatoes: Poor crop. Walnuts: Good crop. January was another very dry month, under three points of rain having fallen. This, after a drought of two years, has played havoc in grass and uncultivated orchards, but has not done the same damage where the spaces between the trees have been well tilled. Pear-scab is bad owing to the number of light showers earlier in the season.—*W. R. L. Williams.*

Manawatu and Wairarapa.—Apples: Very good crop of all varieties; apple-scab not nearly so bad this season, but quite a lot of codlin-moth about. Cherries: Crop picked. Nectarines and peaches: Both varieties looking well, carrying good crops; *Monilia fructigena* bad in parts of the district, while silver-blight is doing considerable damage almost everywhere. Pears: Very clean this season; large crop all through the Manawatu, but small crop in the Wairarapa. Plums: English plums light this season; Japanese fair average crop. Tomatoes: Very good. The weather during January was very favourable to growth and ripening. There has been a little fungoid disease in places.—*G. Stratford.*

WANGANUI. — Apples: Prospects are well maintained. Apricots: Crop harvested. Cherries: Crop harvested. Gooseberries: Crop harvested. Lemons: Trees are doing well, and promise full crops. Nectarines and peaches: Moderate crops of excellent quality are being picked, and for these there is brisk demand. Pears: Prospects well maintained. Plums (English and Japanese): Good average crops; mostly harvested. Strawberries: Plants making good growth. Prospects, generally, are sound. Well-packed goods are coming into the markets, forming severe competition for the few growers who do not grade their fruit.—*W. C. Hyde.*

HASTINGS.—Apples: Heavy crop. Nectarines: Moderate crops. Peaches: Crop very light. Pears: Heavy and clean crop. Plums: Fair crop. Plums (Japanese): Average light. Quinces: Light crop. Raspberries: Good crop. Tomatoes: Have not set well. Walnuts: Crop very good. Although apple and pear scab is in evidence the fruit in the main is beautifully clean. Apple-mildew has been very destructive this season. Ripe-rot fungus has also done considerable damage to stone-fruits, and is to be found more or less throughout the district. Late peaches are lighter than was expected.—*J. A. Campbell.*

WELLINGTON.—Apples: The crop is good, and there is an improvement in the larger areas in cultivation and freedom from disease, although the season has been favourable for scab. Several growers intend extending their orchards, and in Paraparaumu district there is every possibility of an association being formed. Apricots: There are only a few trees of this fruit grown in each large orchard in this district; the crops are poor. Cherries: Practically all harvested; where the frost did not affect the blossom the crops were very satisfactory. Gooseberries: Good crops, with very little blight and scale, were harvested throughout; in some parts of the district growers were annoyed with the birds attacking buds and fruit. Nectarines: Poor crop. Peaches: Fair crop. Pears: Fair average crop, with a decided improvement in the control of scale, moth, and scab; Williams's Bon Chretien are looking well, and should command a good price; late varieties are showing up splendidly. Plums: The late frost spoilt a good crop; Blue Diamonds are more plentiful this year. Plums (Japanese): Burbanks were checked this year and the crop reduced by the frosts; regardless of this, some very fine specimens of this fruit were grown. Raspberries: Considering the climatic conditions prevailing at the time of this fruit setting, a very even crop is showing; an improvement from last year. Tomatoes: The first indoor crop is almost over; crops were not up to expectations, although fair prices ranged throughout. Outside tomatoes are colouring and several lots marketed. The rain lately will no doubt assist this, and fairly large supplies will be to hand. The top trusses are filling out satisfactorily, and where spraying is carried out Irish blight has been checked. I have noticed several growers who have the blight fairly bad through neglect.—*T. C. Webb, jun.*

NELSON.—Apples: Medium crop only; greater shortage in Cox's Orange Pippin than anticipated, should say only 30 per cent. of a crop; Sturmers and Jonathan also fall short, estimate about 70 per cent. of a crop; Munroes are heavy, but a great many rough and cracked; Rokewood, Reinette du Canada, and Rymer are good; Five Crown and other sorts are medium to good. Nectarines: Very good crop; rust has affected them in some places. Peaches: A good crop of Muir and Elberta in most orchards; others medium to good. Pears: Very good crop, and, on the whole, pretty clean. Plums (English and Japanese): Heavy crop of both, many going to waste in places. Raspberries: Fair crop, but did not come up to expectations, owing to the dry weather. Tomatoes: Light crop; almost a failure in many places. The weather for this month has been a contrast to December, inasmuch as in the latter month hardly a fine day was experienced, while this month it has been the reverse. The hot, dry weather on top of so much wet caused the land to bake, consequently many orchards are not as well cultivated as usual. Codlin-moth will be responsible for a good deal of loss in many orchards. Through the peculiar weather-conditions prevailing during December growers were unable to spray satisfactorily, and the moths have been very active during the month. Red spider is also in evidence in considerable numbers in some orchards. Fruit is well forward generally, and it is expected that exporting will be commenced about the middle of February.—*J. H. Thorp.*

BLENHEIM.—Apples: Very good crop; a few early varieties being harvested. Apricots: Very good crop; all early varieties harvested. Cherries: All fruit picked. Gooseberries: All fruit picked. Lemons: Looking well; still gathering

a few. Nectarines: Good crop; a few early varieties being harvested. Peaches: Good crop; a few early varieties being harvested; trees looking better. Pears: Heavy crop; trees having made fresh growth after the damage caused by the brown beetle. Plums: Light crop. Plums (Japanese): Heavy crop. Tomatoes: Fair crop, gathering a few.—*B. G. Goodwin.*

NORTH CANTERBURY AND WEST COAST.—Apples: Fair crop; early varieties being harvested. Apricots: Light crop; nearly over. Cherries: Medium; almost over. Gooseberries: Good crop. Grapes (indoor): Good. Grapes (outdoor): Fair crop; not grown extensively. Nectarines: Fair to good. Peaches: Good crop. Pears: Light crop. Plums: Fair crop. Plums (Japanese): Light crop. Quinces: Fair crop. Raspberries: Fair to good; nearly over. Strawberries: Good. Tomatoes (inside): Good. Tomatoes (outside): Just beginning to come in. Walnuts: Light. Outside-grown tomatoes, which are grown very extensively in Canterbury, are very backward owing to the wet spring. Generally speaking, the bottom trusses have not set well. Unless warm weather prevails during the next few weeks the return will not be as good as usual.—*W. J. Courtier.*

CHRISTCHURCH AND SUBURBS.—Apples: The weather this month has been hot and dry, and apples are holding much better; codlin-moth is much in evidence. Cherries: Crop about finished; leech has been very troublesome. Gooseberries: Crop about finished. Pears: Early varieties—average crop; late varieties—short crop; codlin-moth bad in early kinds. Plums: Average crop now harvesting. Raspberries: Harvesting late varieties; yield not as good as anticipated, due to lack of moisture. Strawberries: Crop finished. Tomatoes: Indoor crops diseased very badly; many houses have no top fruit. A few outdoor tomatoes are being gathered; so far the crop is not promising well. Walnuts: Very poor.—*Gordon Esam.*

TIMARU.—Apples: Crop will be short, owing to attack of scab and of insect pests influenced by weather-conditions prevailing before Christmas; hail caused some damage to unprotected fruit. Apricots: Fair crop, but much scabbed. Cherries: Crop now gathered. Pears: Poor crop; late varieties are badly infected with scab, due to severe climatic conditions prevailing during early portion of last month. Plums (both English and Japanese): Good crop. Loganberries: Record crop; every indication of plantations being planted this coming season in Waimate County, where bulk of berry crops are grown; the berries are in keen demand, and the industry is capable of great expansion. Tomatoes: Good crop. Walnuts: Good crop.—*A. B. Mansfield.*

DUNEDIN.—Apples: A good crop, and looking well. A common fault with many growers in this district this season has been to leave the spraying of arsenate of lead for codlin-moth rather late before making the first application, thereby missing the first brood of grubs. Apricots: Large red variety fell badly when about half-grown. Cherries: Season over. Gooseberries: Season over. Nectarines: Good crop; looking well. Peaches: Very good; some fine fruit being harvested. Pears: Very good crop; remarks about the spraying of apples applicable also to pears. Plums: Very good. Plums (Japanese): Very good. Raspberries: Good crops; but much trouble is experienced by the ravages of caterpillar. Strawberries: Season over. Tomatoes: Looking well. Walnuts: Very good crop. *Phytophthora infestans* has made its appearance among the potato crops of this district, and is doing much damage in many places.—*W. T. Goodwin.*

HONEY-CROP PROSPECTS.

THE Director of Orchards, Gardens, and Apiaries Division has received the following reports on the honey-crop prospects from the Apiary Instructors:—

AUCKLAND.—A fair quantity of honey was gathered during the hot days we had in January, but towards the latter part of the month the white clovers dried up owing to the lack of rain. February has opened with good showers, and the flora should recover somewhat. Generally in the Auckland districts the honey crop will be below the average.—*G. V. Westbrooke.*

Wellington.—The weather being the determining factor in the securing of a honey crop, an estimate for the present season's likely returns cannot be estimated with any accuracy. Extracting has been delayed through a late spring, and this work has been prosecuted in my district but a short time. The writer knows of no case where any of the season's crop has been sold and delivered, but prices are likely to continue firm, with a prospect of advancement.—*F. A. Jacobsen.*

Christchurch.—Last month there was a decided improvement in the weather. This, coupled with a good show of white clover and more favourable conditions for secretion of nectar, has necessitated the addition of extra supers. The honey season is, if anything, later this season, and it is estimated that yields will not be so heavy as last year. In some of the more favoured localities extracting has commenced, and several beekeepers have small lots of new season's honey on the market. Consignments of honey will be exported from Christchurch and South Canterbury.—*L. Bowman.*

Dunedin.—The fine weather experienced in January proved beneficial to beekeepers in Otago and Southland. Reports to hand point to a fair average crop being harvested. Extracting is in progress. In many districts beekeepers have experienced great difficulty in dealing with thick honey, owing, no doubt, to the nectar secreted from bush flora. As yet only small lots of section honey have come forward to market, and prices obtained were highly satisfactory to producers. —*E. A. Earp.*

MARKET CONDITION OF LOCAL FRUIT AND VEGETABLES.

The Fruit Inspectors of the Orchards, Gardens, and Apiaries Division report as follows on the condition of locally grown fruit and vegetables in the shops and auction-rooms and the market position of these for the month of January :—

Auckland.—The markets have been well supplied throughout the past month with all varieties of seasonable fruit. In the earlier part of the month the supply of stone-fruit considerably exceeded the demand ; consequently returns were very low, but towards the latter end prices toned up somewhat. Peaches at the flush realized only from 1s. to 1s. 6d. per 20 lb. case, but a considerable increase was recorded in the latter half of the month, prime cases fetching from 2s. 6d. to 3s. 6d. ; seconds, from 1s. 6d. to 2s. European plums cleared well at 3s. to 4s. per 20 lb. case ; Japanese rose from 1s. to 3s. per case. Apricots averaged about 4s. 6d. per 20 lb. case but growers appear to be sending these forward in rather a ripe condition, many of them being too squashy when tabled to realize profitable returns. Tomatoes have been in good demand at an average of 4d. per lb. Grapes have been in exceptionally good supply, and have averaged from 8d. to 1s. per lb. Apples (dessert): Gravenstein, 5s. per bushel ; Red Astrachan and other varieties, about 4s. Apples (cooking)—best, 4s. 6d. ; seconds, 2s. to 3s. 6d. Pears (Williams's Bon Chretien), 7s. to 8s. per bushel. Jargonelle pears : These also are not picked early enough, as many of them opened up in an overripe condition. Prices for good samples have averaged 4s. 6d. to 5s. per bushel. Lemons have sold well at an average of 12s. per bushel for first-class samples down to 4s. 6d. to 5s. for rough and coarse specimens. Prices are all on an upward tendency, and better returns may reasonably be anticipated in the coming month. A few growers have as yet failed to realize the futility of forwarding fruit infected with scale, codlin-moth, &c. In one week twelve such consignments have been destroyed, amounting in all to over one hundred cases. This loss, coupled with the charges for cartage and destruction and the probability of subsequent prosecution, ought to impress upon growers the folly of neglecting timely spraying.—*C. Craigie.*

Wellington.—Apples are meeting with a poor market, owing to the large consignments of Californian apples still on hand. Several local lines are arriving on the green side ; these are meeting with a poor price, and it may pay the grower

to leave them on the trees a little longer. Prices range from 2s. 4d. to 2s. 6d. per half-case (dump). Plums look well and are in fair supply: Blue Diamonds, 1s. 9d. to 2s. 3d.; Purple-gage, 2s. 6d. to 3s. 4d., and Burbanks, 3s. to 4s. per half-case. Peaches are in very heavy supply at 4s. to 6s., the prices rise and fall according to the quantity on hand. Some arrive overripe, while others are too green. Selecting fruit when properly ready for picking, packing, and distributing is a matter of great importance to the grower, and only by this means will good prices be commanded in the Wellington markets. Pears are in fair demand, and several good lines are to hand. I am pleased to state that the fruit is an improvement, so far, on that of last year. Cooking 3s. 6d. to 4s. 6d., dessert 5s. 6d. to 7s. 6d., per dump. Nelson is forwarding some very good lines of tomatoes, which are bringing 8s. 6d. per half-case. Hutt tomatoes are small; prices, 5s. 6d. to 7s. 6d. per half-case. Apricots are about over; the prices were very irregular—1s. 6d. to 7s. 6d.—owing to many consignments arriving overripe. Grapes from Nelson are realizing 8d. to 10d. per lb. Hutt grapes are selling at 10d. to 1s. per lb. Potatoes, slow sale at £3 to £4 per ton. Local onions, £11 per ton.—*T. C. Webb, jun.*

Christchurch.—Good and regular supplies are coming to hand from Teviot, Nelson, and Auckland. Prices were weak in the early part of the month, due to a glut, but have improved during the last two weeks and are now steady. Choice hothouse tomatoes are now selling at 9d. to 11d. per lb.; in the early part of the month 6d. was the best realized. Nelson outdoor tomatoes are arriving in good condition and selling at 7d. per lb. The price is likely to remain firm for some time. Local outdoor tomatoes are not expected in any quantity before the end of the month Grapes are in good demand at 1s. 6d. per lb. Apples, 3s. to 4s. per half-case, mostly cookers. Pears, 3s. to 4s. per half-case. Apricots: Teviot, 2½d. to 3¼d. per lb.; Nelson, 2d. to 2½d. per lb. Peaches: Teviot, 2¾d. to 3d. per lb.; Nelson, 2½d. per lb. Nectarines, 3d. per lb. Plums: Auckland and Nelson Burbanks, 2d. per lb.; local, 2d. to 2½d. per lb. Cherries (about finished), 5d. to 6d. per lb. Raspberries, 5½d. to 6½d. per lb. Cucumbers (supply mostly from Auckland), 6d. per lb. Potatoes, 5s. per cwt. Onions, 11s. per cwt.—*G. Esam.*

Dunedin.—Only a few lines of jam-strawberries came forward from Otago Central and Waimate at the beginning of the month. The strawberries in the above districts are now finished, but a few very choice crates have arrived from Kaikorai Valley, Dunedin. Cherries, gooseberries, grapes, and nectarines are in good order, but only small supples are forthcoming. Tomatoes, peaches, apricots, currants, raspberries, loganberries, and plums are plentiful and in good order. Small supplies only of apples and pears. Auckland lemons in good order; small lots only. There has been only small supplies of the following vegetables: Cabbage, cauliflowers, lettuce, rhubarb, green peas, potatoes, and marrows. The prices ruled as follows: Grapes, 1s. to 1s. 6d. per lb.; peaches, 3½d. to 6d. per lb.; apricots, 2¾d. to 3¾d.; raspberries, 5d. to 6d. per lb.; loganberries, 6½d. to 7½d. per lb.; nectarines, 2s. 6d. to 3s. 9d. per half-case; jam-strawberries, 3½d. to 4½d., and 1s. per pottle for choice; currants—black, 2½d. to 3½d. per lb.; red, 4½d. per lb.; Auckland lemons, 3s. per case; tomatoes, outside grown, 4¾d. to 5½d.; hothouse, 9d. to 1s. per lb.; plums, 1¾d. to 2½d. per lb.; pears, 2d. per lb.; apples, 4s. to 5s. per case; cabbage, 3s. to 4s. per sack; cauliflowers, 4s. to 6s. per sack; green peas, 1d. to 1½d. per lb.; beans, 2½d. per lb.; marrows, 7s. to 8s. per sack; rhubarb, 1d. per lb. Shops are fairly well stocked.—*E. T. Taylor.*

Bluff.—As is usual during January, a large amount of locally grown fruit has been on this market. Fruit from the Teviot and Roxburgh district predominated, and was always found clean, well packed, and in sound condition. Several shipments arrived from Auckland, these included Burbank plums, pears, peaches, and apricots. They were mostly in poor condition, and do not appear to stand the long journey. Plums and pears were particularly bad, and many cases were absolutely useless. Tomatoes are arriving from Canterbury and Nelson and are mostly in very good condition. The current prices for the month are as follows: Nectarines, 1½d. to 3d. per lb.; peaches, 1½d. to 3d. per lb.; apricots, 2d. to 3½d. per lb.; plums, 1¼d. to 2½d. per lb.; greengages, 2½d. to 4d. per lb.; cherries, 4½d. to 6½d. per lb.; tomatoes, 6½d. to 1s. 1d. per lb.; apples, 1½d. per lb.; pears, 1½d. per lb.; raspberries, 6d. to 6½d. per lb.; loganberries, 7d. to 7½d. per lb.; gooseberries, 2d. to 3d. per lb.; black currants, 3d. to 6d. per lb.; grapes, 1s. 2d. per lb.; cucumbers, 5s. per case; rhubarb, 1½d. to 2d. per lb.; green peas, 1½d. to 2d. per lb.; cabbage, 3s. 6d. per sack; cauliflowers, 2s. per dozen; turnips and carrots, 1s. per dozen bunches; potatoes, 1½d. per lb. at New Year to 5s. per cwt. at end of month. Market oversupplied.—*R. Hutton.*

COMMERCIAL INTELLIGENCE.

COLD-STORAGE RATES IN LONDON.

The High Commissioner, under date of 3rd December, 1913, reports as follows on the subject of cold-storage rates for frozen meat at the Port of London :—

Shortly after my arrival in this country it was brought to my notice by Mr. Crabb that, in addition to the London cold-storage rates on meat being higher than in other towns, concessions or discounts were being granted by the Port of London Authority to those individuals or companies who put large quantities of meat through their stores. As the meat business from New Zealand is so carried out as to necessitate the meat being in many hands, I saw it was impossible for any firms interested in New Zealand meat to obtain full benefit from the concessions, notwithstanding the fact that the amount of frozen meat from New Zealand entering the Port of London is larger than that from either Australia or South America, and I therefore approached the Port of London Authority suggesting that such concessions or discounts be abolished, and a uniform net rate established. The following is a list of the discounts in existence, and from a study of this you will see the impossibility of any benefit accruing to New Zealand through their continuance :—

Business to the extent of—

Under £1,500	in any one year	.. ..	Nil.
£1,500 to £3,000	,,	.. ..	5 per cent.
£3,000 ,, £5,000	,,	.. ..	7½ ,,
£5,000 ,, £7,500	,,	.. ..	10 ,,
£7,500 ,, £10,000	,,	.. ..	12½ ,,
£10,000 ,, £12,500	,,	.. ..	15 ,,
£12,500 ,, £15,000	,,	.. ..	17 ,,
£15,000 and over	,,	.. ..	20 ,,

When I interviewed the Port of London Authority on the subject in February last I was informed that my representations would receive full consideration, and I understand that since that time the Authority has also been approached by the Incorporated Society of Meat-importers. I followed up my interview with several further letters, and on the 1st instant I received from the general manager of the Port of London Authority a letter to the effect that from the 1st January the discounts would be abolished, and that the storage rates would be reduced from 22s. 6d., 20s., and 17s. 6d., to 20s. 9d., 18s. 6d., and 17s. 6d. for the first, second, and third months respectively.

NEW ZEALAND DEER-SKINS.

REPORT ON PROSPECTS FOR EXPORT TRADE.

Writing to the Prime Minister under date of 8th December, the High Commissioner reports as follows on the prospects of a demand for New Zealand deer-skins :—

I now have the honour to state that under my instructions full inquiries have been made by the Produce Department, and I subjoin the information which has been obtained in connection with your inquiry regarding the prospects of a demand for New Zealand deer-skins.

There is a considerable trade in deer-skins, both in Europe and America, for the production of leather useful in several connections. So far as the London market is concerned, the principal descriptions offered come from India, and the prices for these vary, according to the weight and quality of the skins, from 9d. to 1s. 2d. per pound. America does not import many skins from this country, the chief description being elk. She exports, however, a fair quantity of deer-skins of the Virginian variety to the United Kingdom.

The skins from the parks and forests all over the United Kingdom are to a large extent sold by the gamekeepers and owners direct to the leather-dressers, and only small quantities come into the Mincing Lane sales. At these latter goat and deer skins are offered. They are held about every six weeks during the year, and as a rule they are well attended. From information supplied by one of the largest firms of leather-dressers the price paid for fallow-deer skins ranges from 12s., 6d. downwards for bucks, and 6s. 9d. downwards for does, according to quality. In England the bucks are best when killed between July and December, and the does between December and March. Red-deer skins from Scotland are generally found to be badly warbled, and they bring about 2s. 6d. or less per skin. Both red- and fallow-deer skins are more or less thick in the hair and thin in the pelt, and the leather produced from them is used to make either buckskin for breeches or strap and other similar leather. The finer and selected qualities may be used for piano note-drums, but little is used in the glove trade.

Inquiries amongst the hide and skin brokers have shown that New Zealand deer-skins are not very well known here, though in one or two instances small quantities have been handled for sale, and the general opinion is that they would sell well both here and in the United States. One firm sold some New Zealand deer-skins not long since, and they state that though they were very well grown and fairly fresh they had been badly flayed and cut, and were very much shot-damaged. Another firm have advised that they received four sample skins from the Dominion just over two years ago for sale on the London market. There were two stags and two hinds, and they were placed before the trade, by whom they were valued at 4s. each for the stags, and 2s. each for the hinds. In reporting to the Otago Acclimatization Society on the matter the brokers stated that the pelts were poor and thin, owing to constant inbreeding. The animals had been killed at the worst season, when the hair was full and the pelts consequently at their worst. The skins were, however, well taken off and were in very good condition. In reply to this report the Society answered that the prices would not cover the cost of collection, and that the only course would be to kill the animals and leave them on the ground.

New Zealand skins should meet a ready sale here if carefully flayed and free from taint, and not seriously damaged by shot. The skins should be taken off, if possible, while the animal is warm. They should be then well stretched and poisoned by means of an arsenic or some similar wash, and properly dried before shipment. Treated thus they should arrive in good condition. The heads and the shanks below the knee should be cut off : they are of no value, and these rough pieces are more likely to harbour worm and moth than the smooth skins. The best weight is from 3 lb. to 5 lb. per skin, and to obtain the best results the stags should be killed in the autumn and the hinds one or two months later, these periods corresponding to the best English practice. So far as price is concerned, the New Zealand article would probably fetch about 2s. to 6s. per skin according to size, &c., or rather

more than the East Indian skins, and less than the English. The former are not as a rule well grown, the hair is somewhat scanty, and the finish is not too good. The following can only be taken as an approximate estimate, but it will afford some guide :—

Large New Zealand skins weighing over 50 lb. per dozen, 8½d. to 9d. per pound.

Middling skins weighing 36 lb. to 45 lb. per dozen, 1s. 2d. to 1s. 3d. per pound.

Small skins weighing 24 lb. to 36 lb. per dozen, 1s. 2d. to 1s. 3d. per pound.

Fawn-skins, 1s. 5d. to 1s. 5½d. per pound.

The English skins are torn off while the animal is still warm, and as a consequence they are not damaged by knife-marks. They are well stretched, and on account of their freshness and general finish they command good prices.

The last sale for this year has just closed, and the following are the dates arranged for the goat- and deer-skin sales for 1914 : 22nd January, 5th March, 23rd April, 11th June, 23rd July, 10th September, 22nd October, and 3rd December.

Finally, I am informed that the trade has no special season, but the general market is least abundantly supplied between May and September.

I trust this information will prove of value in the Dominion, and shall be glad to be apprised of any intending shipments, either as trial lots or with the view of opening up a regular trade, and shall be pleased to instruct the Produce Department to watch their disposal and make a report thereon.

EGG SHIPMENT TO VANCOUVER.

The following report on the shipment of eggs made this season to the Vancouver market has been received from the New Zealand Government Agent at Vancouver, Mr. W. A. James :—

Reporting in connection with letters of the 24th September and the 10th October, in connection with trial shipment of eggs which arrived per "Niagara" on the 12th instant, as arranged for by the Egg-producers' Association of Christchurch, I would advise that these eggs reached here at a most favourable period, and had they turned out as they might have done would have reaped the benefit of very high prices, and would have realized perhaps as high as 55 cents per dozen from the wholesale produce trade. Unfortunately, they will not realize very good figures, and on this point the individual consignees are all reporting fully to the various shippers, and are sending account sales. I take it that it is your desire that I should deal with the situation generally.

The shipment did not reach Vancouver in general tiptop condition, and this appears to have been the fault of conditions on the ship, and to be the result possibly of the lack of knowledge as to the requirements of egg-carriage in cold-storage chambers. You will understand that nearly every one has some different idea, and it is impossible, therefore, for your representative to speak with authority. The ship's officers, however, advise that they were instructed that the temperature of the chamber should be kept at 35 degrees, and it is apparent that they endeavoured to keep this average. The chamber was filled to its capacity, and it is considered that this was a mistake, as there was not sufficient space for the circulation of air. As a result, too, of this crowding, some cases were stored against the refrigerating-pipes. There seems to have been a certain leakage, for some of the cases when unloaded from the ship were found to be ice-coated, and on examination some of the eggs were found to have been frozen solid—so solid that they had to be thrown upon the ground in order to break them. This might indicate that the temperature of the chamber was not always uniform, for reports are that some of the eggs turned out in perfect condition, although it may also merely indicate that this damage may have resulted only in those cases which

were stored against the pipes, or which were subjected to some leakage, by sweating of the pipes, or otherwise which cannot now be determined.

Some of the shippers did take an infinite amount of care in the packing, as you indicated had been done, and this great care seems to be considered as contributing to some of the damage which has resulted. Some packers wrapped each egg in its separate compartment with a nesting of "excelsior." This is considered both superflous and unnecessary, and conducive both to trouble in unpacking and as introducing an element of danger during carriage, for the reason that in the event of sweating or moisture in the chamber this excelsior will hold that moisture and stimulate mildew, with resultant damage to the egg. Other shippers packed in patent wire carriers. These are considered to be an expense which is unnecessary, and which do not conform to the usual package in general use. Other packers used the usual form of packing—that is, the paper partition—with a compartment for each egg and a sheet of pulp paper between each layer. This is good. Some of these layers, however, were punched with holes in which each egg sat. This is not considered good practice; the layers are considered to be better without these holes. Some packers also omitted to have an adequate padding of excelsior at the bottom of the cases, which resulted in the lower layer of eggs being damaged by breakage to some degree.

The general opinion of the entire wholesale produce trade is that the endeavour should be made in packing to conform with the usual methods which are in general practice on this continent, and which has proved to be entirely satisfactory. The case used is the ordinary egg-case made to contain thirty dozen, and which has a wooden partition in the centre dividing the case into two equal parts containing fifteen dozen each. A padding of excelsior (say, about $\frac{3}{4}$ in. in thickness) is placed in the bottom of each compartment. Upon this a sheet of pulp paper is laid, upon which is laid the "filler," also of pulp paper, which contains a compartment for each egg. Then comes another sheet of pulp paper (not perforated), then the filler, and so on until the compartment is filled. When filled a final sheet of the pulp paper is placed on top of the eggs, upon which a top cushion of excelsior is laid. This cushion, when the lid is sprung on, effectively prevents all movement. In this fashion eggs are carried in refrigerator cars across the continent, are shipped in here from California, and are shipped from Vancouver by steamer and rail, and again by boat into Dawson, in the Yukon Territory, and carry perfectly under conditions in comparison with which shipment from your country should be easy. In the matter of the lids of these cases, your packers seem to always nail their lids on. The most desirable case is fitted with a bent piece of wire, such as is used upon your butter-boxes, which fits over a slat on the end of the case, which is about 1 in. in thickness. Cases are considered to be far more desirable when they are not branded. Eggs, too, should not be branded. One consignor is said to have branded all his eggs with a rubber stamp. The receivers advise that the branding was very badly done, an excess of ink being taken up by the stamp. This branding is said to have run, and to have actually permeated the shell, being visible on the inside. It is considered, too, bad practice to brand an egg which, however good, carries the proof with it that it is not strictly fresh, and is probably at best approximately a month old.

Regarding the temperature at which eggs should be carried, I would report that the wholesale produce trade are agreed that it is the practice to carry eggs both in cold storage and across the continent in refrigerator cars at 33 degrees. I am further advised that not only is it essential that this temperature should be maintained, but that a certain degree of humidity should also be maintained.

As stated, I have been in close touch continuously with all concerned in the matter of this shipment, and have met with the greatest courtesy throughout.

It was your request that I should wire to you the approximate prices ruling on eggs during last January, and the anticipated prices which are expected to prevail during January, 1914. I have not followed you instructions because I have found it impossible to obtain any thoroughly reliable data. No one will hazard an opinion concerning futures. All agree that they can give no indication, and that the egg situation is one—this being a competitive market—which is subject to so many conditions, which in turn may be upset at a moment's notice, and which cannot be foreseen, that no one will venture an opinion which would be of any guidance to your shippers.

I might mention that the general feeling of the wholesale trade is that your shippers should be more ready to quote figures on request. It is complained

that a request for a firm quotation—c.i.f. or otherwise—is invariably met with the reply, "What can your market offer?" Complaint is general along all lines of trade on this score, and the claim is made that this is not conducive to good business or an interchange of trade. It is maintained that as sellers your exporters should be willing to state their price.

ARGENTINE SHIPMENTS.

The Department of Agriculture, Industries, and Commerce has received the following cablegram from Buenos Aires, dated 3rd instant:—

The following shipments of produce were despatched from the Argentine to the United Kingdom during January, 1914 (compared with January, 1913):—

	1914.	1913.
Frozen beef (quarters)	137,000	114,000
Chilled beef (quarters)	352,000	134,000
Frozen mutton (carcases)	246,000	165,000
Frozen lamb (carcases)	45,000	30,000
Butter (cwt.)	7,286	13,661

TRADE BETWEEN VICTORIA AND NEW ZEALAND.

Quarter ended 31st December, 1913.

The imports into Victoria from New Zealand amounted to £87,585, the principal items being—Mares (stud), £418; sheep (for breeding), £829; cattle (stud), £300; bullion (gold), £26,257; hemp, £8,065; fish, all kinds, £2,856; machinery, all kinds, £1,022; oakum and tow, £168; hides (cattle), £9,134; timber, £33,140; rubber manufactures, £727; books, £502.

The exports from Victoria to New Zealand amounted to £100,354, the principal items being—Books (printed), £5,557; fruits (dried), £1,637; fruits (fresh), £2,539; flour, £1,104; rice (cleaned), £4,079; leather, £1,988; machinery (all kinds), £6,167; manures, £6,784; oils (all kinds), £820; onions, £530; rubber manufactures n.e.i., £13,002; hides (cattle), £251; manufactured stationery, £931; sugar (cane), £442; tea, £4,727; tin ingots, £3,320; tobacco (manufactured), £15,735; wines (all kinds), £2,436; glycerine, £830; jewellery, £3,450; horses, geldings (ordinary), £500; bark (tanning), £1,104.

The Commonwealth Government has prohibited the importation into Australia of all forms of prickly, spiny, spineless, or any species of Cactaceæ, unless (1) the permission of the Minister of State for Trade and Customs shall have been obtained in respect of each consignment four clear months prior to its despatch from any oversea port; (2) every such consignment shall have been isolated and grown in quarantine at a quarantine-station for a period of not less than two years, and for such longer period as the Minister may deem necessary, and (3) the quantity of Cactaceæ in any one consignment is less than one hundred plants or portions of plants. It is further provided that any consignment of Cactaceæ ordered into quarantine shall be at the sole disposal of the Minister, and may at any time be destroyed.

THE DOMINION'S EXPORTS TO BRITAIN.

COMPILED FROM MANIFESTS OF VESSELS SAILED DURING RESPECTIVE MONTHS OF CURRENT AND PRECEDING SEASONS.

Month.		Mutton, Carcases.	Lamb, Carcases.	Beef, Quarters.	Pork, Carcases.	Butter, Boxes.	Cheese, Crates.	Wool, Bales.	Wheat, Sacks.	Oats, Sacks.	Rabbits, Crates.	Hemp, Bales.	Tow, Bales.	Kauri-gum, Cases.
January,	1914	231,766	464,185	30,424	33	150,492	136,086	108,742	..	500	2,851	15,234	4,306	11,133
,,	*1913*	*166,714*	*229,179*	*6,886*	*611*	*109,251*	*63,864*	*118,986*	..	*329*	..	*6,969*	*2,215*	*4,110*
February,	1913	326,337	403,698	12,666	64	89,098	81,733	127,968	..	..	..	12,520	4,295	7,973
,,	*1912*	*208,424*	*273,246*	*13,052*	..	*101,544*	*62,398*	*106,074*	*607*	..	..	*6,831*	*1,615*	*1,056*
March,	1913	86,224	210,166	7,428	250	47,560	59,844	49,661	..	115	..	12,552	7,662	4,043
,,	*1912*	*324,192*	*518,402*	*20,201*	*16*	*64,925*	*49,308*	*70,022*	..	*4,980*	..	*3,832*	*1,352*	*2,644*
April,	1913	303,937	647,948	16,834	457	11,358	52,934	61,988	..	300	..	9,049	3,351	3,889
,,	*1912*	*213,178*	*355,829*	*7,046*	..	*38,986*	*38,137*	*31,615*	*4,905*	*2,180*	..	*5,134*	*1,958*	*4,458*
May,	1913	418,221	731,520	22,073	100	637	46,304	33,281	..	265	2,000	15,751	5,005	9,057
,,	*1912*	*454,506*	*744,287*	*32,691*	..	*1,441*	*40,535*	*51,833*	*11,157*	*26,569*	*1,500*	*11,963*	*2,826*	*6,287*
June,	1913	315,034	528,815	24,444	588	79	3,166	18,741	..	..	13,072	13,592	4,065	5,439
,,	*1912*	*170,738*	*287,697*	*24,605*	*221*	*558*	*7,712*	*18,138*	*9,160*	*7,622*	*2,039*	*5,646*	*1,168*	*1,213*
July,	1913	215,713	331,353	14,030	..	..	1,687	17,169	5,651	300	9,190	9,682	1,720	10,793
,,	*1912*	*291,097*	*371,474*	*29,457*	*210*	*684*	*1,255*	*16,567*	*44,324*	*23,216*	*20,573*	*7,463*	*1,856*	*5,892*
August,	1913	161,593	178,263	13,129	6	8	407	8,494	11,604	45	38,480	3,714	2,310	6,406
,,	*1912*	*207,239*	*157,589*	*10,478*	..	*559*	..	*10,409*	*42,580*	*38,802*	*19,562*	*3,758*	*523*	*4,219*
September,	1913	133,122	83,521	5,334	16	6,575	2,020	7,176	..	..	16,336	3,826	1,501	10,049
,,	*1912*	*44,657*	*40,759*	*1,174*	..	*8,723*	*1,204*	*6,671*	*15,742*	*17,363*	*19,933*	*2,957*	*501*	*3,671*
October,	1913	14,122	25,735	580	..	42,847	21,452	2,705	..	..	10,020	6,986	3,672	2,923
,,	*1912*	*51,263*	*15,393*	*3,882*	..	*49,962*	*16,389*	*4,647*	*7,952*	*64,480*	*5,396*	*4,193*	*401*	*9,075*
November,	1913	20	1,479	..	..	53,468	23,722	1,891	..	..	2,478	4,162	771	2,314
,,	*1912*	*54,175*	*8,286*	*282*	..	*140,751*	*57,181*	*33,305*	*3,680*	*40,896*	*13,892*	*9,866*	*1,911*	*5,466*
December,	1913	128,087	86,890	8,909	..	249,526	124,821	51,385	..	250	24,479	19,807	5,276	11,273
,,	*1912*	*117,740*	*106,310*	*4,774*	..	*119,885*	*66,213*	*44,789*	*5,868*	*30,490*	*10,070*	*3,816*	*2,613*	*3,686*

LONDON MARKET VALUES.

COMPARATIVE STATEMENT COMPILED FROM THE HIGH COMMISSIONER'S CABLES FOR THE THREE MONTHS ENDED 31ST JANUARY, 1914.

London Date.	Wool. Bradford Quotations for Tops. 36's.	40's.	44's.	50's.	56's.	60's.	Mutton. Canterbury.	North Island.	Lamb. Canterbury.	Other than Canterbury.	Beef. Hinds.	Fores.	Butter. New Zealand.	Danish.	Cheese. New Zealand White.	New Zealand Coloured.	Canadian.	Hemp (Spot). New Zealand Good-fair.	New Zealand Fair.	Manila.	Hemp (Forward Shipment). New Zealand Good-fair.	New Zealand Fair.	Manila.	Wheat. Short-berried.	Long-berried.	Oats. Sparrowbills.	Danish.
1913.							d.	d.	d.	d.	d.	d.															
Nov. 1	..	..	..	..	..	..	4⅞	4⅝	5⅞	5⅛	4½	3⅝	..	135/0	..	..	..	29/5/0	25/15/0	30/10/0	29/5/0	25/15/0	30/5/0	..	..	..	..
„ 8	..	..	..	..	..	..	4⅞	4½	5⅜	5⅛	4½	3⅝	128/0	132/0	64/0	64/0	65/0	28/15/0	25/15/0	30/10/0	28/15/0	25/15/0	29/15/0	..	35/6	..	..
„ 15	1/3¼	/3½	1/4	1/7	1/10	2/3½	4⅞	4⅞	5½	5⅛	4½	3⅝	126/0	131/0	64/0	64/0	66/0	28/10/0	25/10/0	30/5/0	..	..	29/15/0	..	..	..	..
„ 22	..	..	..	..	..	..	..	4⅝	..	..	..	..	126/0	131/0	64/0	65/0	67/0	28/5/0	25/10/0	30/0/0	28/10/0	25/15/0	29/10/0	..	..	..	..
„ 29	1/3	1/3¼	1/3¾	1/7	1/9¼	2/3	..	4⅝	5⅜	..	4½	3⅞	128/0	..	65/0	65/6	68/0	28/0/0	25/17/6	30/0/0	27/12/6	25/5/0	29/10/0	..	..	..	..
Dec. 6	..	..	..	..	..	..	..	5	5⅞	5½	4½	4	130/0	132/0	66/0	67/0	68/0	27/0/0	24/0/0	29/0/0	26/15/0	24/15/0	28/5/0	..	..	..	..
„ 13	1/2¾	1/3	1/3½	1/6¾	1/9½	2/2¾	..	..	6¼	..	..	..	130/0	133/0	66/0	67/0	68/0	27/0/0	24/0/0	29/0/0	26/10/0	24/10/0	27/15/0	..	..	..	..
„ 20	1/2½	1/3¼	..	1/6¾	1/9½	2/2¼	..	5	6½	..	..	..	128/0	133/0	66/0	67/0	68/0	26/0/0	23/15/0	27/0/0	..	..	26/0/0	..	..	..	..
„ 27	..	..	..	..	..	..	..	..	6¾	..	4½	4	124/0	133/0	66/0	67/0	68/0	26/0/0	23/10/0	27/0/0	..	..	26/0/0	..	..	..	..
1914.																											
Jan. 3	..	..	..	..	..	..	..	5	6⅞		4	4	122/0	133/0	66/0	67/0	69/0	25/10/0	23/10/0	27/0/0	..	..	27/0/0	..	..	..	..
„ 10	..	..	..	..	..	..	..	5	6½	6¾	4⅜	3⅞	120/0	130/0	66/0	67/0	69/0	25/10/0	23/5/0	27/10/0	25/15/0	23/15/0	27/0/0	..	..	..	..
„ 17	..	..	..	..	..	..	..	5⅛	6½	6¾	4½	4	118/0	128/0	66/0	67/0	70/0	26/0/0	24/0/0	28/10/0	26/5/0	24/5/0	28/0/0	..	..	..	..
„ 24	..	..	..	..	..	..	..	5⅛	6¼	7¼	..	..	116/0	127/0	66/0	67/0	70/0	..	..	28/10/0	26/10/0	24/5/0	29/0/0	..	..	..	..
„ 31	..	..	..	..	..	..	..	4⅞	..	6⅞	4¾	4	116/0	128/0	65/0	67/0	70/0	..	25/0/0	28/10/0	26/10/0	24/5/0	29/0/0	..	..	..	..

HEMP AND TOW GRADING RETURNS.

JANUARY.

Hemp.—The total number of bales graded was 11,886, as compared with 12,716 for the corresponding month of last year, a decrease of 830 bales. For the twelve months ending 31st January, 1914, the number of bales graded was 168,589, as compared with 104,995 for the previous twelve months, the increase being 63,594 bales.

Tow.—During the month 4,276 bales were dealt with, as compared with 4,844 for the corresponding month of last year, a decrease of 568 bales. For the twelve months ending 31st January, 1914, the number of bales graded was 57,038, as compared with 34,277 for the previous twelve months, an increase of 22,761 bales.

HEMP, TOW, AND STRIPPER-SLIPS GRADED THROUGHOUT THE DOMINION DURING THE MONTH OF JANUARY, 1914.

Hemp.

Port.	Superior.	Fine.	Good-fair.	Fair.		Common.	Rejected.	Condemned.	Total.
				High Point.	Low Point.				
	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.	Bales.
Auckland ..	..	..	344	594	795	158	7	33	1,931
Napier ..	..	..	..	..	..	..	..	..	..
Foxton ..	..	..	809	1,459	559	98	27	..	2,952
Wellington ..	..	15	834	1,563	1,436	93	6	6	3,953
Blenheim ..	..	69	340	61	14	..	..	..	490
Picton ..	..	139	425	21	13	2	..	..	600
Lyttelton ..	..	..	..	..	..	..	..	..	..
Dunedin ..	..	..	109	130	76	..	..	..	315
Bluff	..	..	490	925	147	83	..	..	1,645
Totals ..	..	223	3,357	4,753	3,040	434	40	39	11,886
Percentages of totals	..	1·87	28·24	39·98	25·58	3·65	0·34	0·33	..

Tow.

Port.	First Grade.	Second Grade.	Third Grade.	Condemned.	Total.
	Bales.	Bales.	Bales.	Bales.	Bales.
Auckland ..	..	262	485	179	926
Napier	..	..	..	..	..
Foxton ..	101	504	132	..	737
Wellington ..	191	687	273	18	1,169
Blenheim ..	94	195	57	..	346
Picton	36	119	30	..	185
Lyttelton ..	..	..	298	..	208
Dunedin ..	..	46	80	34	160
Bluff	..	135	389	21	545
Totals ..	422	1,948	1,654	252	4,276

Stripper-slips.—Passed for export: Foxton, 150; Wellington, 49—total, 199. Condemned: Foxton, 4.

NEW ZEALAND-SAN FRANCISCO TRADE.

FOLLOWING are the shipments of produce for San Francisco, Tahiti, and Rarotonga, and transhipments for Vancouver from New Zealand, since October last:—

—	"Tahiti," 10th Oct.	"Moana," 13th Nov.	"Aorangi," 5th Dec.	"Tahiti," 7th Jan.	"Moana," 30th Jan.
Gum, packages	21	..	57	6	44
Seeds, sacks	365	..	..	184	..
Grain, &c., sacks	76	34	83	148	250
Meat, cases	950	240	616	896	431
Onions, cases	..	..	2	5	6
Potatoes, sacks	9	2	6	42	20
Sundries, packages	247	16	1,825	1,891	469
Butter, boxes	4,415	4,198	5,815	10,819	2,702
Hemp, bales	..	131	..	..	100
Frozen lamb, carcases	2	2	4	502	2
,, mutton, ,,	..	..	..	..	..
,, veal, ,,	..	..	..	..	..
,, beef, quarters	..	..	..	..	..
,, sundries, packages	..	..	..	..	..
Timber, pieces	136	..	..	..	..

NEW ZEALAND-VANCOUVER TRADE.

FOLLOWING are the shipments of produce for Vancouver and North American ports from New Zealand since August last:—

—	"Marama," 30th Aug.	"Makura," 27th Sept.	"Niagara," 25th Oct.	"Marama," 22nd Nov.	"Makura," 24th Dec.	"Niagara," 17th Jan.
Butter, boxes	1,753	10,062	18,335	17,009	23,698	20,076
Mutton, carcases	1,500	1,119	1,189	1,450	..	1,000
Lamb	..	..	..	..	10	1,000
Beef, quarters	4,217	955	259	..	990	1,933
Veal, carcases	74	171	291	285	362	877
Frozen sundries, packages	..	2,202	12	55	12	..
Wool, bales	103	207	320	28	6	17
Grass-seeds, beans, &c., sacks	38	9	..	2	8	42
Hides and skins, sacks, &c.	1,468	3,533	4,144	2,947	709	2,083
Onions, cases	..	..	..	..	..	4,750
Sheep-skins, bales	..	..	146	..	..	130
Jam, cases	53	..	74	101	40	135
Sundries, packages	1,406	2,586	1,018	2,183	172	1,518
Potatoes, crates	..	..	..	..	..	..
Kauri-gum, packages	..	180	267	300	330 13	303 ..
Hemp, bales	116	284	380	129		
Rabbits, crates	500	..	100	..	..	..
Timber, pieces	..	2,819	2,709	468	..	3,450
Eggs, cases	..	..	336	..	20	..
Meats (canned, &c.), cases	..	..	60	52	7	1,605
Fertilizers, sacks	..	..	914	..	..	..

STOCK EXPORTED.

THE following table shows the numbers and descriptions of stock exported from the Dominion during the month of January:—

Port of Shipment.	Horses.			Sheep.			Cattle.			Pigs.		Dogs.		
	To Australia.	To Pacific Islands.	To Vancouver.	To Australia.	To Pacific Islands.	To South America.	To Australia.	To Pacific Islands.	To Montevideo.	To Australia.	To Pacific Islands.	To Australia.	To Pacific Islands.	To [illegible]
Auckland ..	7	20	..	..	138	..	..	4	..	..	14	1	2	..
Napier ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Wellington	3	1	..	2	..	134	..	..	..	..	4	8	..	..
Lyttelton ..	30	..	..	183	..	15	5	..	..	1	..	1	..	1
Dunedin ..	5	..	..	15	..	..	..	..	..	..	..	1	..	..
Bluff ..	4	..	..	8	..	..	..	..	..	2	..	5	..	..
Totals ..	49	21	..	209	138	149	5	4	..	3	18	16	2	1

Auckland also exported 1 crate of poultry to the Pacific islands.

Following are the particulars of horses exported: 3 thoroughbred stallions, 2 trotting stallions, 1 pony stallion, 3 pony mares, 27 mares, and 34 geldings.

STOCK IN QUARANTINE.

THE following stock were received into quarantine during the month of January:—

No.	Description.	Sex.	Port of Origin.	Owner or Agent.	Address.
			MOTUIHI ISLAND (AUCKLAND).		
1	Shorthorn heifer ..	..	London ..	H. Hutchinson ..	Whangarei.
1	Dog	Male ..	Vancouver	G. S. Reynolds ..	..
1	Collie dog ..	Female	Glasgow ..	J. S. Grant ..	Gisborne.
			SOMES ISLAND (WELLINGTON).		
2	Collie dogs ..	Male ..	London ..	J. B. Gaisford ..	Bull's.
2	South Devon rams	..	,, ..	W. J. Birch ..	Marton.
3	Trotting horses ..	Female	San Francisco	E. E. Lelievre ..	Akaroa.
1	Trotting stallion ..	..	Ditto ..	John Potter ..	Oamaru.
1	Bay trotter, colt ..	..	,, ..	C. D. Hudson ..	Dunedin.
			QUAIL ISLAND (LYTTELTON).		
1	Cocker spaniel ..	Male ..	London ..	T. W. Richmond ..	Addington, Christchurch.